RAILROAD GAZETTE

FRIDAY, DEC. 6.

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Contributions.

Rolling Steel Rails.

CHICAGO, Ill., Nov. 30, 1889.

TO THE EDITOR OF THE RAILROAD GAZETTE.

I notice in your report of the discussion of Mr. D. K. Nicholson's paper on rolling steel rails, at the late New York meeting of the American Society of Mechanical Engineers, in the *Railroad Gazette* of Nov. 22, "Mr. Hunt, of Chicago," is made to say some things which this Mr. Hunt, of Chicago, thinks *he* did not utter. During that discussion I thought I stated that the Johnson semi-steel rolls contained about two per cent. carbon, not 0.20 per cent., and that they were harder than cast iron, but did *not* have the ductility of so-called commercial steel.

I am very proud of Chicago, and therefore was glad to boast of the wonderful output of the Chicago rail mill. No doubt my pride made me say that one of "our" Chicago mills beat the world's record in October by producing on one train of rolls 28,491 tons of rails. I could not have said, as quoted, "the mill with which I was connected," because my days of mill management are passed, and I have no such connection, excepting as the inspecting representative of many of the leading railroads in trying to see that quantity is not secured at the expense of quality. The credit of the wonderful work in October belongs to the Union Steel Works of the Illinois Steel Co. It was a great performance, and the successful gentlemen deserve all honor. ROBERT W. HUNT.

Railroad Men's Votes in Iowa.

TO THE EDITOR OF THE RAILROAD GAZETTE.

It is hardly proven that the results of the late election in Iowa "indicate any revulsion in popular feeling in the state with regard to restrictive railroad legislation."

It will be remembered that at the election of 1888 the railroad legislation of the previous session was approved and all parties responsible for it were "vindicated," not merely by the vote of the Republicans, but also by that of the opposition. All candidates for Railroad Commissioners of either party, except those who have been identified with recent railroad legislation in its execution, were practically ignored. Each who was striving to be his own successor received not only the vote of his own party, but also substantial aid from the opposite party, running far ahead of his own ticket. The Republican candidate received from 13,000 to 15,000, and the Democratic candidate 21 000 more votes than the Presidential Electors on the same tickets. Surely the vindictive feeling against railroads was not confined to the Republican party.

In the late election, too, the opposition candidates vied with those on the Republican ticket in their expressions of favor toward restrictive legislation, and these sentiments were not confined to the anti-monopoly wing.

The total vote of 1888 for the Republican and Democratic candidates was more than 391,000; that of 1889 showing a loss of 38,000, or nearly 10 per cent. The Republican vote of 1888 was more than 211,000, and that of 1889 less by 38,000, or 18 per cent. The Democratic vote of 1888 was 180,000, and that of 1889 was almost exactly the same. In the twelve counties containing the largest cities, the total Republican vote of 1888 was 43,800, and that of 1889 was less by 12,500, or 28 per cent., while the total Democratic vote for 1888 was about 50,000, and that for 1889 less by about 600.

Take three interior counties in which are located railroad division stations. The Republican vote for 1889 was nine per cent. less, and the Democratic about one-third of one per cent. greater than that of 1888. If some railroad employés did vote this year, as it appeared to them, for the side that would yield the most bread and butter, there is no evidence of dictation or hint on the part of employers; and even then, some Democrats must have stayed at home, whose places these barely filled.

Surely it would seem to have been a case merely of "contributive negligence" on the part of Republicans at the last election in Iowa. What caused this negligence, or why some may have preferred to husk corn to going to vote, will probably remain an open question till after another election. Probably it will hardly be safe to assume yet that the people of Iowa are ready to yield entirely the question of railroad control, or will hastily petition the repeal of Congressional legislation governing transportation. Let us hope that clean politics and clean railroading may be the reciprocals of each other. H.

Tests of Wheels Made in the Contracting Chill.

PHILADELPHIA, Pa., Nov 27, 1889.

TO THE EDITOR OF THE RAILROAD GAZETTE.

Referring to the editorial in your issue of Nov. 22, on contracting chills, and especially to the remark that "it is only by comparing average results from a large number of wheels that anything conclusive can be established," we take pleasure in sending you the following statements concerning 5,000 wheels, all of which were cast in our form of chill. Since this table was compiled we have shipped 1,000 more, of which 940 did not vary more than ⅛ in circumference.

In an experience of fully two years, when we were gradually reducing the number of our solid chills and increasing the contracting, we found the difference in circumference between wheels cast in the two forms of chill of exactly the same diameter, to be from ⅝ to ¾ in., those in the contracting chills being uniformly smaller than the others. A. WHITNEY & SONS.

TEST OF 5,000 WHEELS,

delivered to Savannah, Florida & Western Railroad on contract for 10,000 wheels. These wheels were inspected by the R. W. Hunt & Co.'s Inspection Bureau, and made from March to October, 1889, in and from 50 to 60 different chills.

Circumference.—2,375 were of exactly the same circumference; 2,064 but ⅛ in. less than the 2,375; 531 were ⅛ in. more than the 2,375; 20 were ¼ in. less than the 2,064; 10 were ⅛ in. more than the 531.

Roundness.—Tested by a true ring resting on the cone of the wheel, not one was found with a variation of more than 1/32 in. from the ring at any point.

Strength.—To test the strength, the specifications required that one wheel out of every 100 ready for shipment should be broken by a drop of 140 lbs. weight falling 12 ft., and that it should stand five blows without breaking into two or more pieces. For the 5,000 wheels shipped 53 were thus broken, with the following results:

The start the first crack the least number of blows was 6.

To start the first crack the greatest number of blows was 49.

To start the first crack the average number of blows was 13 6/100.

To break the wheel in two the least number of blows was 10.

To break the wheel in two the greatest number of blows was 94.

To break the wheel in two the average number of blows was 44.

Eleven wheels broke between 10 and 20 blows, eight between 20 and 40, and thirty-four between 40 and 100.

Chill.—The average depth of chill in the 53 wheels broken was found to be 5/16 in. at the root of the flange, and it did not vary in any case more than ⅛ in. around the wheel.

General Characteristics.—Not a single wheel was rejected from the whole number offered for inspection, because of any chill cracks, blow holes or other imperfection of workmanship or material, and the metal in all the wheels broken was found to be of a good soft open gray in the plate, free from slag or dirt.

The Manitoba Report.

TO THE EDITOR OF THE RAILROAD GAZETTE.

When the plan was proposed of resurrecting the Great Northern Railway Company and turning over to it the securities of the St. Paul, Minneapolis & Manitoba, together with a lease of that railroad, the stockholders paying only $50 for each $100 share in the Great Northern, the *Railroad Gazette* made the pertinent remark: "The average man is so dazzled by the prospect of buying $100 for $50 that he is apt to be enthusiastic over the chance of purchasing it from himself on those terms."

This is confirmed by the recent Manitoba report. In it stocks and bonds of other companies of 20½ millions par value are put down at 9½ millions net. What they consist of is not stated otherwise than by the list of roads owned, including Montana Central, Eastern Minnesota and Northern Steamship Co. These undoubtedly are far from paying dividends or even interest. Interest and dividends from securities owned is stated in the income account at $210,000. Where this sum therefore came from is unknown, but figuring backward it shows the stocks and bonds owned to be worth about four millions of dollars; adding to this the "other properties" at one-half their estimated value (invoice $1,537,261) we have less than five millions of net assets, and yet the Great Northern scheme includes the paying off of eight millions of collateral trust bonds by that company in return for the transfer of the Manitoba securities. This discrepancy may be much greater than I have made it and may explain the street gossip that the first act of the Great Northern will be to issue 10 millions of bonds. In this connection I am a bit puzzled to find in the staid *Commercial & Financial Chronicle* such a sentence as this: "Obviously the most immediate advantage to result is in the saving in interest—$400,000—to be effected by the retirement of the collateral trust bonds." According to the above, they can't save it, and if they did retire the eight millions, it could only be done by changing the payment from one pocket to another. What can the *Chronicle* mean? The Manitoba report has in its income account an item "from other sources $539,752." This is also unexplained and leaves it open to suspicion whether this is a fair credit or only another way of concealing a further deficit than the one acknowledged, $130,756. When will railroad managers learn that honesty is still the best policy?

The *Chronicle* has another curious statement in the same article: "Should the new investment (*i. e.*, the lease, etc., to the Great Northern) prove directly profitable, the benefits . . . would add to the value of the guarantee of Manitoba stock (six per cent). If it should prove unfortunate, the Manitoba would have to stand none of the financial burden." Now, I submit that this is absolute nonsense—heads I win, tails you lose—or else there is some strong company like the Canadian Pacific behind the Great Northern. Insiders in Wall street are offering 12 to 14 per cent. premium for the right to subscribe to the new Great Northern stock. No one knows better than they that the Great Northern is at present only "in the air," and that its guarantee is of value only as the old Manitoba Railroad is valuable. Why, then, are these men offering a premium for stock like this? To unload afterwards? Or is there something about this whole matter which has not got out? And where will the Great Northern (if left unsupported) and its leased properties come out in case this paper company is expected to raise more money for Manitoba extensions west of Montana—extensions which, if built, must be for some time to come incapable of earning fixed charges?

INQUIRER.

[We consider these points well taken. The report leaves a number of things wholly unexplained which should have been given in detail. The half million of income not accounted for is bad. So is the claim to have charged $360,000 of unavailable assets to profit and loss *without putting it in the income account.* This looks like manipulation of the most questionable character.—EDITOR RAILROAD GAZETTE.]

Marine Engine Tests in Actual Service.

In the report of the Committee on Marine Engine Trials, Prof. Alex. B. W. Kennedy chairman, to the Institution of Mechanical Engineers of Great Britain, some interesting statements were made with regard to boiler efficiencies:

The rate of combustion in the furnaces was 19.25 lbs. of fuel per square foot of grate surface per hour, or 0.602 lbs. per square foot of total heating surface per hour. The evaporation was at the rate of 7.46 lbs. of water per pound of fuel put on the fire, including clinker. This water, supplied at 163 degrees Fahrenheit and evaporated at 363 degrees, must have received heat at the rate of 1,002 thermal units per pound. Each pound of it was therefore equivalent to 1.10 lbs. evaporated from and at 212 degrees. The actual evaporation reduced to this standard was 8.21 lbs., or 0.62 lbs. per pound of carbon-value in fuel. The equivalent amount of heat utilized per pound of coal was 62 per cent. of the whole calorific value of the coal, which represents the actual boiler efficiency. The amount of water evaporated per square foot of tube surface was 5.18 lbs. per hour, and per square foot of total heating surface 4.49 lbs. per hour. These quantities have to be multiplied by 1.1 to bring them to standard conditions. The average rate of transmission of heat through the material of the boiler was 4,709 thermal units per square foot of heating surface per hour.

With regard to engine efficiencies:

The measurement of feed water shows that the quantity used per indicated horse power per hour was only 14.98 lbs., or, within the limits of accuracy of measurement, 15 lbs. For purposes of comparison with a perfect engine, it may be assumed that the higher limit of temperature is that of the boiler steam, 363 degrees Fahrenheit, while the lower limit may be taken as 120 degrees Fahrenheit. If the engine had been "perfect" and had worked between 363 degrees and 120 degrees Fahrenheit, it should have turned into work 0.295 of the heat received by it. The heat actually turned into work was 54.6 per cent. of that of a "perfect" engine working between the same limits of temperature and receiving the same quantity of heat per minute. This is a high efficiency, but corresponds with the low feed-water consumption. The absolute engine efficiency, or ratio of the heat turned into work to the total heat received by the feed water, was 16.1 per cent. The combined efficiency of the boilers and engines, or ratio of the heat turned into work to the total heat of combustion of the fuel, was almost exactly 10 per cent.

There is considerable difficulty in measuring the amount of fuel used in any furnace, but it is especially difficult under the conditions of marine service. The following method was determined by Professor Kennedy as being the best to follow in approximating the condition of fires before and after a test:

The fires were let alone just before the beginning of the trial until they would not keep up the steam, so that the pressure fell from 151 lbs. down to 145; and the experiment was then commenced by firing with weighed coal. The same conditions existed at the end of the trial, the fires being left alone until they would no longer keep up the steam pressure. Thus both at the beginning and at the end the value of the fires was such as would just not keep up the steam. Of course, in such a long trial there was not likely to be any considerable error from inequality of fires at start and at finish; but probably this was the most accurate way in

which the matter could be dealt with. The idea of drawing the fires was altogether out of the question.

The fundamental object of the committee is well stated by the following:

It was only fair to the committee to point out that the object of these trials is not to form a basis on which to criticise the design of the engines or anything of that kind. The object is twofold: First, to find out what a particular set of fairly representative engines were actually doing; and, second, to see whether this could be ascertained under conditions which did not interfere with the ordinary working of the engines. In trials already made it had been found that this could really be accomplished; there had been no interference with the ordinary working of the engines.

Mr. Willans, the inventor of a high-speed triple-expansion engine of growing fame, stated with reference to the cylinder condensation shown by the reports:

It seemed evident, however, that the initial condensation was large, for the object of jackets was to diminish initial condensation; and assuming that any large proportion of the 22.9 per cent. pertaining to the high-pressure cylinder was condensed in the jackets, it was evident that in an engine which was not jacketed still more initial condensation would take place.

The discussion regarding a basis for comparison of efficiencies of engines was lively and long continued, and in response to several attacks on the report of the committee, the chairman, Prof. Kennedy, gave the following interesting information and expert opinion on the subject:

"The choice of a standard, however, he was strongly of opinion, was essentially a matter of expediency and not of principle, and its importance appeared to him to have been much exaggerated. He wished to point out that, while it might be convenient to adopt a certain engine as an ideal steam engine and to compare with it actual steam engines, it was vitally important to insist that the highest conceivable efficiency for any heat engine, whether air or steam or gas, could be expressed always by the same ratio. In any heat engine, with whatever medium it might be worked, the highest possible efficiency that could be got out of it was represented by what was called the Carnot efficiency $\frac{T_1 - T_2}{T_1}$. If this were clearly understood, no more would be heard of latent-heat delusions; whereas the notion that steam engines were essentially different from air engines was certain to be perverted presently, by those who did not rightly understand the subject, to the support of the most misleading heresies.

In illustration of his argument, in reply, the chairman gave the following interesting table on the comparative efficiencies of locomotive and other engines:

1. KIND OF ENGINE.	2. Boiler pressure per square inch above atmosphere.	3. Condenser temperature.	4. Heat received per pound weight of steam.	5. Carnot efficiency.
	Lbs.	Fahr.	Units.	Per cent.
Quadruple expansion ...	200	120°	1,128	33.9
Triple expansion.....	150	120°	1,121	32.1
Factory engine.....	60	120°	1,106	27.0
Watt engine.....	10	120°	1,087	20.1
		Exhaust.		
Locomotive.....	150	212°	1,009	18.5

HEAT WHICH MIGHT POSSIBLY BE TURNED INTO WORK.

KIND OF ENGINE.	6. Method in report.	7. Ratio to factory engine.	8. Mr. Gray's method.	9. Ratio to factory engine.	10. Ratio of col. 7 to col. 9.
	Units.		Units.		
Quadruple expansion.	383	1.285	345	1.260	1.020
Triple expansion.....	360	1.208	327	1.193	1.013
Factory engine	298	1.000	274	1.000	1.000
Watt engine	219	0.735	205	0.748	0.982
Locomotive.....	187	0.628	175	0.638	0.985

Cannon-Granite Torpedo Co.'s Fusee.

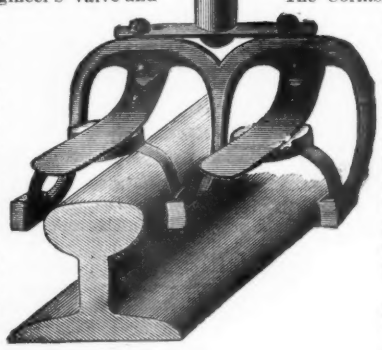
The fusees made by this company, of which an illustration is shown herewith, are now used by a number of roads, some of which are named below. This fusee was given a test on the Cincinnati, Hamilton & Dayton, on the night of Oct. 28, in the presence of a number of officers of the road. The five-minute torch was timed and found to show a red flame for 6½ minutes. The manufacturers calculate to have each torch burn a little longer than the time guaranteed, and the 10-minute torches burn nearly 12 minutes. A test was made to determine the effect of rain upon the light. Water was poured upon the burning torch from a sprinkling can, and the fire was finally put out, but the officer making the test says that it was not a fair one, as the quantity and force of the water was greater than that of any rain. A lighted torch was viewed from a distance of one-half mile, at which distance the red color was perfect, and the apparent size of the light about that of a headlight. The light is so thoroughly diffused that as a signal its conspicuousness does not diminish in proportion to its distance from the observer. The next test was to try to extinguish the light by fanning it with a hat and with a coat, but this apparently had no effect upon it. Finally, a fusee was thrown from a moving train and found to burn as well as those handled more carefully.

Among roads from which orders have recently been received by the manufacturers for this device are the Norfolk & Western, Chesapeake & Ohio and Southern Pacific; also the Cheshire, Concord, Chicago, Rock Island & Pacific, Chicago, Milwaukee & St. Paul, Michigan Central, Cleveland, Cincinnati, Chicago & St. Louis, Cincinnati, Hamilton & Dayton, New York Central & Hudson River, New York, Lake Erie & Western.

TRAIN-SIGNAL TORCH.

Torpedo Adjuster.

The engraving shown herewith illustrates a device manufactured by the Cannon-Granite Torpedo Co., of Pittsburgh, Pa., for placing torpedoes on the rail while a train is in motion. The handle is telescopic and is extensible from 36 in. to 52 in. At the lower end are two prongs, in which is placed the torpedo. The metal strips for fastening the torpedo to the rail are made of spring steel, and they firmly clasp the head of the rail automatically. Slots in the end of the prongs hold the springs apart, so that they will embrace the rail, and a flat spring attached to the adjuster presses downward upon the torpedo, thus holding it firmly in place. In the illustration the observer stands behind the train, looking toward it. In using the adjuster it is placed upon the rail in the position shown and dragged along until it reaches the point where it is desired to place the torpedo. A slight downward push upon the handle then disengages the torpedo, which immediately clasps the rail, being pushed downward by the pressure of the spring above it. This instrument is used on the Pennsylvania lines west of Pittsburgh, the Chicago & Northwestern, Michigan Central, Burlington & Missouri River and other roads.



TORPEDO ADJUSTER.

The Boyden Quick-Acting Brake.

On Wednesday of this week an exhibition trial was made of the Boyden Quick-Acting Brake on the Baltimore & Ohio, during a run out and return of 18¾ miles, between Camden Station (Baltimore) and Annapolis Junction. The object of the run was not to make a special test of the brake, but for the purpose of exhibiting its action to a party of capitalists and railroad men. The train consisted of locomotive, tender, one baggage car and four coaches.

The engine was of the eight-wheel type, with 17 × 24 cylinders and 63 in. drivers, weighing 80,000 lbs., and was equipped with the Boyden air pump, engineer's valve and governor. It also had the Boyden squeeze driver brake and Ross-Meehan driver brake shoes, 24 in. long. The tender weighed 58,000 lbs., and was equipped with the Westinghouse old style automatic brake. The baggage car and the four coaches weighed about 44,000 lbs. each. The total load was, therefore, about 179 tons. The baggage car and the first three coaches were equipped with the Boyden quick-action brake. The fourth coach was furnished with the Westinghouse old style automatic brakes in order to show that the Boyden apparatus would work successfully therewith.

On the outward run the fourth car, with the Westinghouse brake, was cut out for the purpose of showing the independent action of the Boyden equipment. On the return trip the brakes on all the cars were operated.

Several ordinary stops were made to show the action of the brake, and the apparatus operated to the satisfaction of all. One emergency stop was made from a speed between 40 and 50 miles per hour, on a tangent down a grade of 45 ft. per mile, in a distance of 780 ft., in 21 seconds' time. The rail was dry and the weather clear and cold. The driver brake was used, but no sand was applied to the rail.

The Boyden quick-acting brake, as used in this test, is being applied to 20 new engines for the Cincinnati, Washington & Baltimore, now being built at the Brooks Locomotive Works, Dunkirk, N. Y.

The World's Fair.

The guarantee fund for the World's Fair in New York amounted to a little over five million dollars ($5,018,716) on Nov. 30. The subscription lists had then been open for 32 working days; and the largest subscription, $611,259, was received on Nov. 21, of which amount $362,767 was subscribed by the Lager Beer Brewers' Board of Trade. Other notable subscriptions received on this day were three of $25,000 each from Jay Gould, the Manhattan Railway Co. and the Western Union Telegraph Co. Mr. Starin, who agreed, before the subscription lists were opened, to raise $500,000 from the domestic steamship companies, provided other interests would contribute in like proportion, has withdrawn his offer, alleging that the other interests have not responded properly, but promises an individual subscription of $10,090.

On Nov. 30 the General Executive Committee resolved that the subscriptions be continued "so as to enable all of our citizens as well as the citizens of adjoining cities to participate in the public spirit now for the first time becoming fairly aroused and exhibited."

The Committee on Legislation has prepared a memorial and a bill for submission to Congress. These have not been made public. Senator Cullom is at the head of a committee on behalf of Chicago to confer with New York, St. Louis and Washington interests relative to getting speedy action by Congress.

An interesting statement has recently been published, giving the dates of prominent events relating to the Centennial Exhibition of 1876. A brief synopsis will doubtless be of interest, especially for those who believe that the short space of time remaining before May 1, 1892, is one of the greatest obstacles to the proposed World's Fair:

Council of Philadelphia requested to memorialize Congress, Jan. 27, 1870, 76 months before opening.
Memorial presented, Feb. 24, 1870, 75 months before opening.
Act passed, March 3, 1871, 62 months before opening.
Site selected, March 11, 1872, 50 months before opening.
Director-General appointed, May 12, 1873, 36 months before opening.
General plans approved, Nov. 1, 1873, 30 months before opening.
Buildings commenced, Oct. 1, 1874, 19 months before opening.

The New York *World* has interviewed the Senators and Representatives in Congress, asking them if they favor a World's Fair in 1892, where it should be held, and why. The replies, as might be expected, were noncommittal in many cases, the result of the poll being as follows: Chicago, 67; New York, 48; Washington, 36; St. Louis, 22; non-committal, 158; not interviewed, 82; total, 413.

Pendry's Throttle Valve for Locomotives.

The Cornish or double-beat valve of Watt has long been almost universally used on American locomotives. The difficulty with this form of valve is to keep it steam-tight, which is seldom or never done, and should the perfection of workmanship be such that the valve is tight when cold, yet when heated by the steam the difference of expansion between the valve body and valve seat will cause the lower valve to be lifted from its seat. The designs of valves shown in figs. 1 and 2 are intended to overcome the above difficulty, and at the same time perfect the balancing.

Fig. 1 shows the device on a dry pipe having the usual goose-neck form. The valve differs from the ordinary type, in that the lower valve is closed and formed into a plunger, the upper only being used to admit steam. The lower has ports, *f*, through it to admit steam to the plunger. When the throttle lever is pulled out the rod *G* is lifted, and thereby lever *D*, and carries with it the small valve *a*, its stem *c*, and eduction valve *c'*, thus admitting steam at *a* and closing eduction valve *c'*. The steam now fills cylinder *d* through the passage *c'* and exerts an upward force on plunger, *B*, equal to the downward or seating pressure on main valve *A*, thus putting the whole valve very nearly in equilibrium. A further motion of the throttle lever opens valve *A* to any desired distance; a reverse movement of the levers lowers valve *a*, stem *c* and valve *c'*, exhausting the steam rapidly from the chamber *d* through ports *f f*, and allowing main valve *A* to fall to its seat. The valve *c'* remains open, and while running with valve closed, if the engine is reversed, the extra pressure in dry pipe operates to lift valve *A*, because it enters through ports *f* under plunger *B*, thus unbalancing valve and making the pressure in pipe act only on the valve; the valve in this

instance only operating the same as a check valve between pipe and boiler, which rapidly opens by collapsing spring *F*, which can be set to any pressure.

Engineers adopted the heavy "goose-neck" form of casting because the style of valve used demanded it, although the loss by friction due to the steam having to pass this right-angle bend, particularly when working full throttle, was well known to them. The form of valve, fig. 2, is a straight-way locomotive throttle valve, the action being the same as described in fig. 1, the steam passing around the plunger and its chamber as shown by the arrows. This not only makes a lighter and more symmetrical form, but also reduces the friction incident to the flow of steam.

The eduction valve in fig. 2 differs from that shown in fig. 1, but its action is the same; the small hole *E* permits the escape of water of condensation, and in this form of eduction valve allows a slight reduction of pressure, so that it can be closed easily.

The Chicago & Grand Trunk has 150 of these valves on its engines, some of which have been in constant use for years without causing trouble from leaking. The master mechanic of that road says they are just as tight as when first put on, and all engines are equipped with them as fast as they come in for repairs. The following letter gives the opinion of the mechanical superintendent of the Grand Trunk Railway after using many of these valves for two years:

"After two years' service, it has proved itself admirably adapted for locomotive uses, and I can thoroughly recommend it. It has altogether stopped the trouble we had with leaky throttles, and when it requires grinding, it is a very simple matter, as it has only one face.

H. ROBERTS, Mechanical Sup't."

This valve is made by the Hoffman Machine Co., Detroit, Mich., and was devised by Mr. W. H. Pendry.

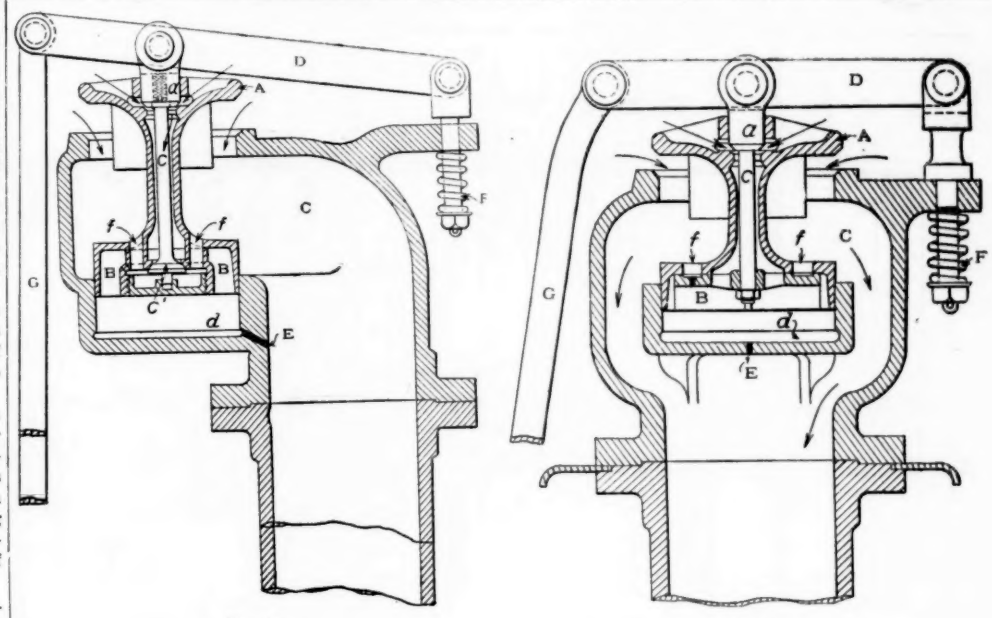


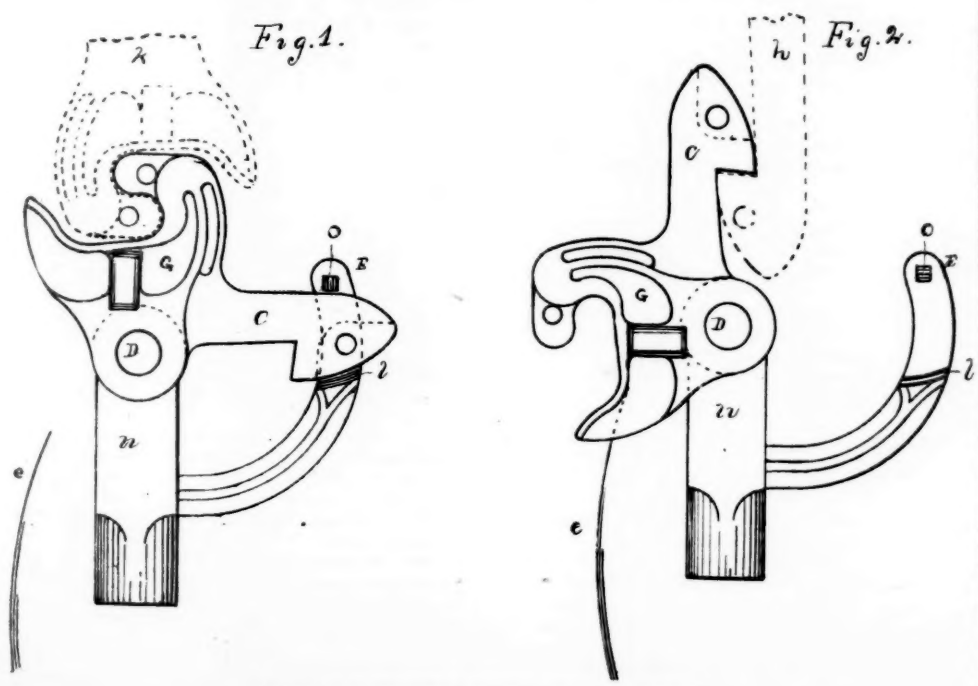
Fig. 1. Fig .2.

PENDRY'S THROTTLE VALVE.

Caswell's Interchangeable Car Coupler.

The car coupler shown herewith combines the Hinson and the Miller, and has been designed especially for cars used in both passenger and freight train service. It obviates entirely the necessity of removing one kind of coupler and substituting another. Fig. 1 shows the Hinson coupler in service, and the Miller hook swung to one side. Fig. 2 shows the Miller hook in and the Hinson out of service. Letters *G K* in fig. 1 show the relative position of two Hinson couplers in service. At *C* is shown the Miller hook turned back upon the receiving arm *L E*. At *n* is the shank of the coupler, which differs but little from that of the Master Car Builders' standard, except that it is heavier and stiffer. *D* is the hinge pin on which the combination coupler swings in and out of service. The curved line *e* shows the form and location of the elliptic spring which is used to keep the Miller hook in place when it is in service, but which remains idle, as shown in fig. 1, when the Hinson coupler is in service. *H* and *C* in fig. 2 show the relative position of the Miller hook couplings when in service. The receiving arm is now idle, and the elliptic spring works against the guard arm of the Hinson to keep the Miller in place.

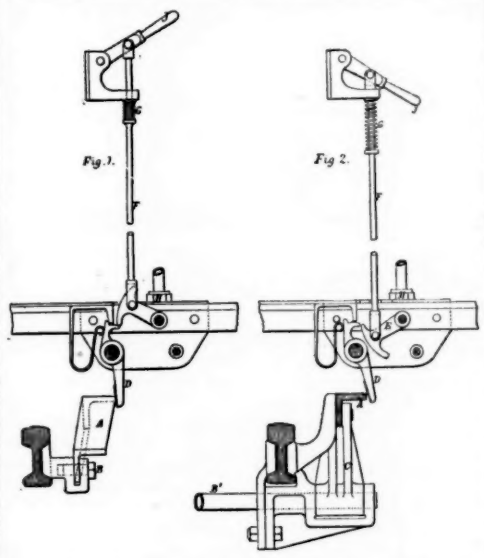
The cuts do not show devices for unlocking the combination coupler, but either the lever and chain commonly used in connection with the Miller, or a round rod and a wheel like a brake staff winding the chain around it can be used. Every part necessary to make each of the two kinds of coupling complete for service is retained in connection with this combination, and is so attached as to be durable and easy to operate, it requiring less than one minute to substitute one of the couplings for the other.



CASWELL'S INTERCHANGEABLE CAR COUPLER.

Drummond's Fog Signal.

The drawings shown herewith illustrate an apparatus for giving locomotive runners an audible warning when



they pass a caution signal. It is the invention of Mr. Dugald Drummond, Mechanical Superintendent of the Caledonian Railway, Scotland, and consists essentially of a guide bar fixed on the track at a slight angle to the rail and a trigger carried on the locomotive. When the guide bar is raised the trigger slides along its edge, and is gradually pushed sidewise until it trips a locking catch and releases a rod which is subject to the action of a spring. This rod may be connected to a valve, when the train is fitted with continuous power brakes, or it may carry electrical contacts to set a gong in action. In the former case the brake is applied automatically on passing a signal set to danger, and in the latter the runner is warned that he has not a clear road before him. Fig. 1 shows the apparatus when the trigger is about to be tripped, and fig. 2 when the operation is complete. *A* is a guide pivoted at *B* to the side of the rail, and carried at the other end by a crank *C* connected by the shaft *B'* to the signal. When the signal arm is lowered the whole of the guide *A* stands below the trigger *D*, fixed on the locomotive, and the latter passes over it untouched. When the signal is raised the end *C* of the guide bar rises too, until its edge, for the greater part of the length, stands in a position where the trigger *D* will encounter it. As the guide bar is placed at an angle to the rail, the trigger is gradually forced outwards until its upper beak is removed from the catch *E*, which drops. The rod *F* and lever *J* fall also under the action of the spring *G*, and the valve *H*, connected with the brake pipe, is opened. The application of the brakes instantly tells the runner what has happened, and he can either let them remain on, or he can replace the catch *E* by the lever *J*, and take what measures he deems fit. When the train is not fitted with continuous brakes the rod *F* can set in action an electric gong, or can open the whistle. The cost of fitting the apparatus to a locomotive is very moderate; on an engine fitted for working a continuous brake it costs about $15, while on a nonfitted engine it costs slightly more.

London *Engineering*, to which we are indebted for the cut and description, says that this apparatus has been tried by Mr. Drummond with the best results, and adds that Mr. Drummond's name alone is a guarantee of the mechanical excellency of the apparatus.

Engineering further says:

"The picture of a man driving at express speed through a fog, and depending for his knowledge of his position upon recognizing the various sounds of the bridges that he passes over or under, is one which an outsider would not have dared to draw. Yet there are times when it is perfectly true. When a man is harassed on the one hand by the fear of reproof for losing time, and on the other hand by the risk of collision, it must seem easy to him to devise a means by which the signals he passes shall be reproduced on his engine.

". . . Very few of the schemes have been practical, but an exception is to be found on the Northern of France, where a very efficient electric apparatus is in use as a connection with the distant signals and the locomotives. On the road there is arranged a plate of considerable size; this is coupled with the distant signal in such a way that it rises when the signal is at danger, and is depressed when the signal shows line clear. Upon the engine is a large and stiff wire brush which sweeps over the surface of the plate when the latter is raised. An electric circuit passes from the terminal of a battery to the plate, thence through the brush to signaling apparatus on the engine, and from that to earth through the rails. The brush is a solid stiff construction capable of sweeping snow off the plate, and of scraping its way through a coat of ice. The whole appliance gives, we understand, very satisfactory results."

The disadvantage of a device of this kind as compared with a torpedo signal, such as the National (Palmer) used in this country, is the necessity of placing a special apparatus on every locomotive in use on the road before the signal can be made available. On the other hand, the use of this instrument involves no consumption of material. Granting the adequacy of its mechanical

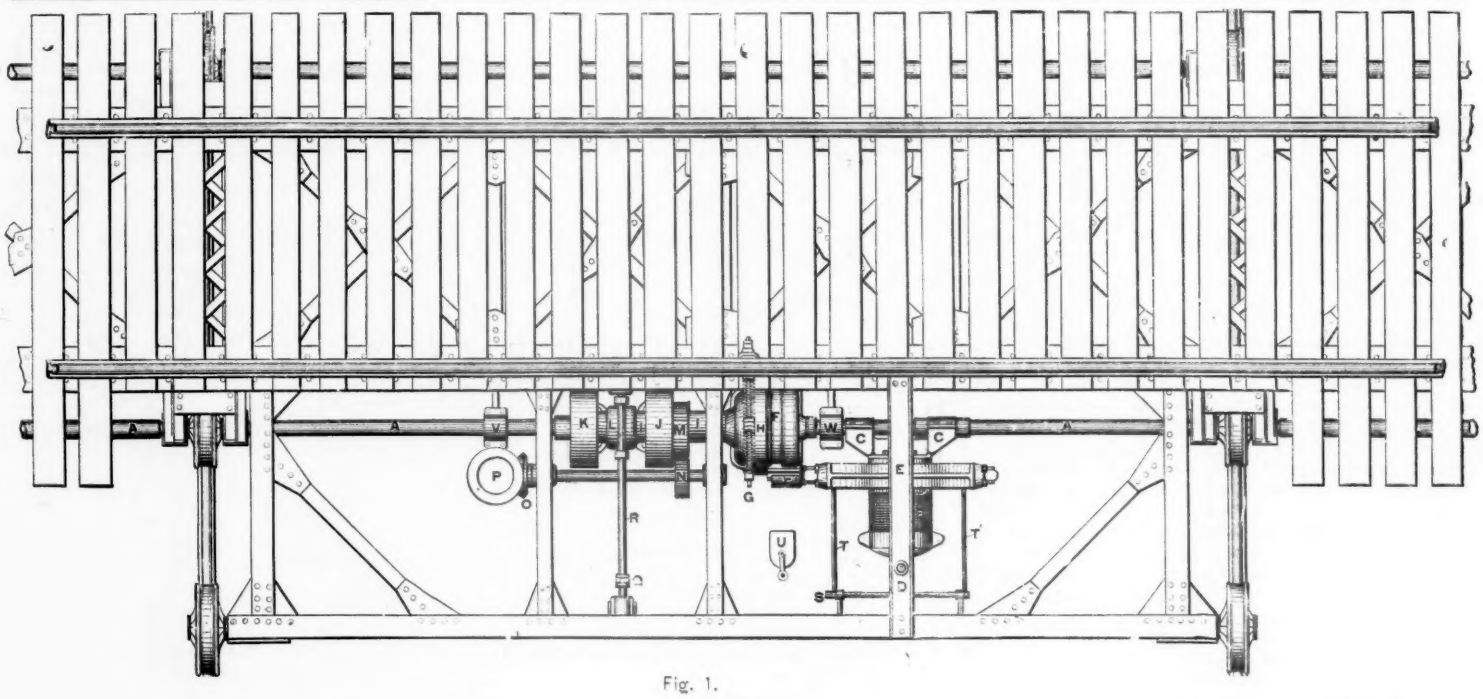


Fig. 1.

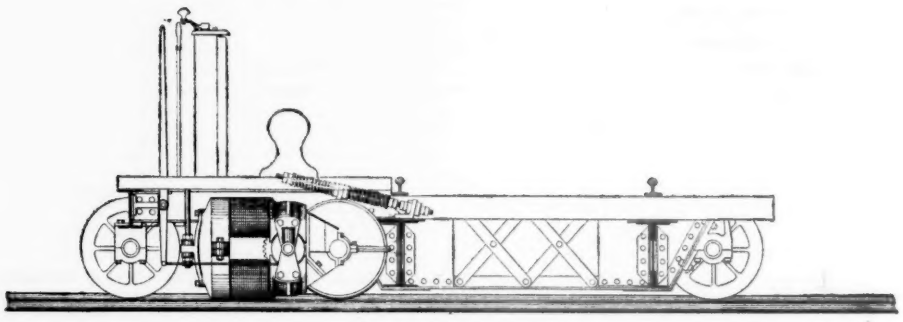


Fig. 2.—Side Elevation.

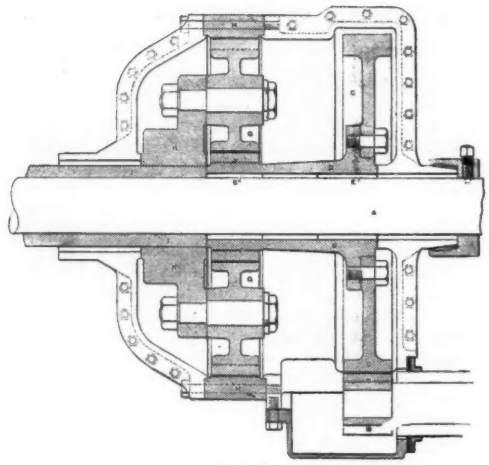


Fig. 3.

ELECTRIC TRANSFER TABLE AT EAST FITCHBURG SHOP.—FITCHBURG RAILROAD.

features, the machine ought to run a much longer time without attention than is the case with a torpedo magazine, which must be examined at stated periods to see if the stock of caps has been used up.

Electric Transfer Table at Fitchburg.

The transfer table shown in the cuts is used by the Fitchburg Railroad Co. at its new car shops at East Fitchburg, Mass., to move cars to and from the various tracks, some 48 in number, in the two parallel shops, each of which is 500 ft. long. The table is 70 ft. wide and 10 ft. long, and runs on four rails in the pit between the shops. One of the great difficulties found in this and other tables before the Union Electric Car Co. put in their devices was in so placing them that the tracks would match the tracks in the building, it requiring the help of a number of men with bars to get the table into a proper position and keep it there. With this system, the man at the switch, which fully controls and governs the table in all its operations, can stop and match the tracks and hold them in position. The cars are drawn on and off by the same motor that moves the table.

Before the electric system was applied the front of the table was the same as the rear, as seen in the cut. *A* is the front axle of the table. *B* is the motor held on axle *A* by journals *C C* and suspended at its rear end by bolt *D* from channel bar *E*. *F* is the circular case inclosing the driving gears, the mechanism of which is shown in fig. 3. This is mounted loosely on axle *A*. Case *F* is attached to the frame of the table by lug *H*, through which passes rod *G*. Springs on this rod between the lug and nuts on each end permit a motion of 2 in. each way on the part of the gear case, to prevent shock and relieve the armature on starting or stopping. A bonnet *F* covers the gear or pinion on the end of the armature shaft, and is slotted to permit the play of the case as above mentioned.

Within the gear case *F*, the last gear in the series is clamped to a long sleeve *I*, which rotates freely on the axle of the table and passes out from the case to the clutches *J* and *K*. The clutch drum *J* revolves freely on the sleeve *I*. Clutch drum *K* is keyed to the axle. When the clutch collar *L* is thrown to the left, the sleeve is clutched to the shaft and the motor propels the table. When the collar *L* is thrown to the right the sleeve is clutched to *J*, which, through gears *M* and *N* and bevel wheels at *O*, operates the capstan *P*, which is used to haul cars on and off the table by means of a rope. When the clutch *J* is in operation *K* is, of course, free, and vice versa. The clutch collar *L* is operated through lever *Q* and shaft *R*. Lever *S* and links *T T* operate the mechanism for shifting commutator brushes in order to reverse the direction of armature rotation. *U* is the electric switch, which governs and controls all the movements of the table.

Bearings *V* and *W* were added to the table to support the extra weight thrown on the shaft by the motor gearing and clutches. The extension of the table for supporting and inclosing the motor and gearing is floored and housed over to protect the operator and apparatus from the weather, but this was done after our photograph was taken. Access to the apparatus is had through the trap in the floor.

Fig. 3 is a longitudinal cross section through the gear case. *A* is the axle of the car, which rotates free of any attachments in the case. *B* is the pinion in the armature shaft which engages the large gear *C*, which is mounted in the sleeve *D*. Sleeve *D* rotates on the shaft *A* on bushings *E E*, and is formed at *F* into a pinion which engages gear wheels *G* and *G*. These gears are intermediate between the pinion *F* and the internal gear wheel *H*, which forms part of the gear case marked *F* in fig. 1, inclosing the whole. The gears *G G* are mounted by stud pins to the spider *K*, which in turn is clamped to the sleeve *I*. Sleeve *I* passes within the case to the clutches, as before described, and shown by letter *I* in fig. 1. It will be perceived that the rotation of pinion *F* causes gears *G G* to travel round in the internal gear *H*, carrying with them the spider and the attached sleeve.

The case is filled to a depth of 6 in. with a light spindle oil, which, when the gear rotates, completely drenches every part of the interior of the case with oil, and which through oil passages reaches every part of the bearing surfaces. The large gear *C*, working in the recess of the case, acts as a centrifugal pump, pouring a constant shower of oil on the motor pinion, with such effect that after a month's constant use of the table, the tool marks had not worn off the armature pinion, which is the hardest used gear in the case. The motor is run by the lighting dynamos of the shops, and is connected by a complete metallic circuit and double trolleys. The whole operation of the table and dynamo requires the services of but three men, who are thus enabled to accomplish more than was formerly done by 12 men, who much of the time had the assistance of a locomotive.

Zinc Storage Batteries—Prof. Main's Invention.

At the recent meeting of the National Academy of Sciences at Philadelphia, Dr. George F. Barker read a paper on zinc storage batteries, describing an invention of Prof. Main. The success of this battery is so marked as to make it a great improvement in storage batteries and a great step in the direction of numerous applications of electricity, of which the most obvious and interesting to readers of the *Railroad Gazette* will be as a motor.

Dr. Barker began with an anecdote about a flock of sheep he once saw debark from a vessel navigating one of the Scotch canals. When the first sheep left the gangplank somebody put a cane in its way, and the sheep had to jump over. The cane was then withdrawn, but every succeeding sheep jumped just where his predecessor had done. This, he said, illustrates the methods of inventors of storage batteries, who, having once got the idea that two plates of lead covered with oxide were the proper construction, continued to vary their form, shape and arrangements without deviating from the beaten track, and selecting other materials; for instance, zinc for the hydrogen plate, which gives a higher electromotive force.

It was Planti who first succeeded in making storage batteries. He produced peroxide of lead by electrolytic corrosion, which is a long and slow process. Faure expedited the process by putting red oxide of lead on one plate and litharge on another, and subjecting them to electrolytic action, which reduced the litharge to metallic lead, and raised the red oxide to the peroxide. Even this process requires some time, the only advantage gained over Planti being a reduction in length of time. There must in all cases be electrolytic action, though the mode of operation of this is not easy to determine. Edison, with his usual radicalism, insists that peroxide thus deposited is essentially different from that prepared by chemical action, but Dr. Barker suggests that, on account of difference of conductivity in the lead oxides, there may be differences in conductivity of the successive layers.

The Faure batteries cannot be discharged of more than four-fifths of their electricity, say below 1.87 volts, without the formation of sulphate, which destroys the battery. Hence, like a petted child, these batteries have proved too delicate for rough work and in need of constant attention.

The electromotive force of zinc combined with lead peroxide is greater than that of any other available combination. The formula for computation of electromotive force is E. M. F. = Z, H, J; where Z is the electro chemical equivalent, H the heat of combustion, and J the mechanical equivalent of heat. Applying this formula, we find that the electromotive force of zinc and peroxide = 2.5, when that of lead and peroxide = 2.

Main's battery consists of zinc plates placed horizon-

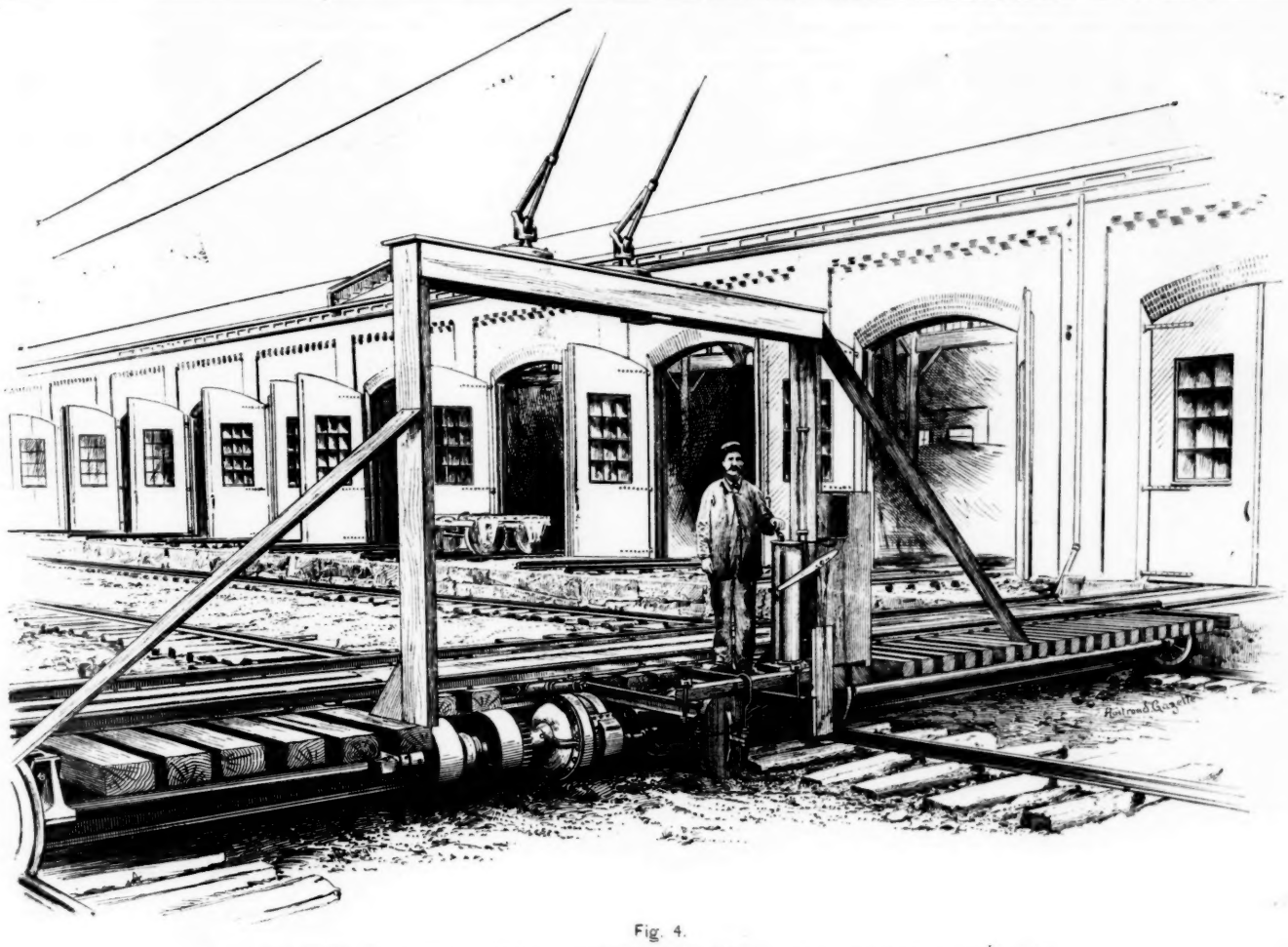


Fig. 4.

ELECTRIC TRANSFER TABLE AT EAST FITCHBURG SHOP.—FITCHBURG RAILROAD.

tally, and, strange as it may appear, *riveted* to copper support plates, and of lead plates perforated so as to present a very large surface area, and prepared by the Planté process. A month will enable a cell to be thus prepared, owing to the large amount of lead surface exposed to electrolytic action.

The power of this battery per pound of lead used, expressed in ampère-hours, is 7.42, against 3.62, 4.10 and 1.77 respectively for three styles of battery of the Faure type; and in watt-hours, 17 against 6.44, 7.3 and 3.3 for the others.

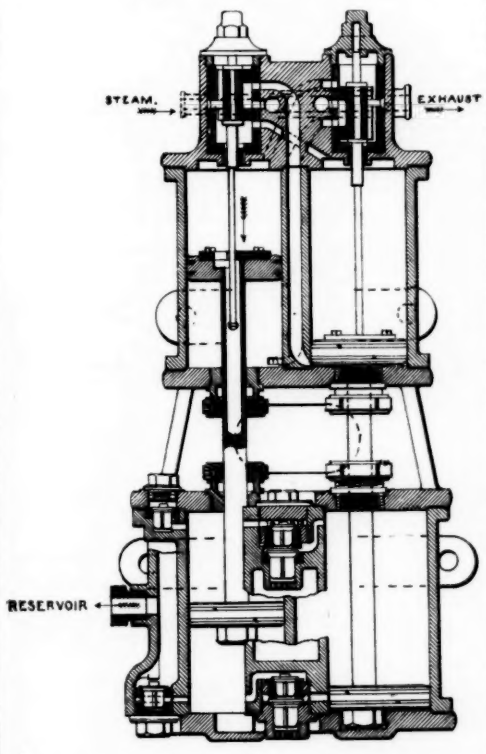
The Main batteries will bear rough usage, and can be entirely discharged of their electricity with impunity. Three of them were shown to the Academy which had been used for two years, and roughly handled as a test. They were still in perfect order. The invention has not yet been put on the market.

The Massey Air Pump.

The Eames Vacuum Brake Co. are in the field with an air pump of novel design, for which they claim high economy and great durability. This pump has two cylinders of medium size, in which both pistons compress air and each actuates the valve for the other by a strong and positive mechanism. The aim in this construction is to secure a pump that will always start when steam is admitted, and will not stop so long as steam is supplied, and one which will be as certain in action at one stroke per minute as at fifty.

The most notable difference between this pump and any single-cylinder pump is in the quantity of air that it will compress at a given steam pressure and velocity. One air cylinder is the same size as the steam cylinders, but the other may be twice or more the capacity of the steam cylinder which actuates it, as it only has to compress air to a pressure less than one-half that of the steam.

The action is as follows: The larger air cylinder takes air through the outside check valve until full. The piston then remains motionless until the smaller piston has made a stroke and filled the smaller cylinder full of air through the same outside valve and the valve between the two cylinders. When the smaller piston reaches the end of its stroke it shifts the valve for the larger piston, which then compresses the air in the larger cylinder into the smaller cylinder: the smaller piston then compresses the air into the reservoir. As the larger piston always has a definite work to do, that is, to compress the contents of the two cylinders into the smaller one, the larger air piston may be of as much greater area than the steam piston which actuates it as the difference in pressures of the steam and air. In the illustration the volume of the larger cylinder is twice that of the smaller one; the contents of both would, therefore, be three times the smaller one; hence, the greatest resistance would be three atmospheres, or 5 lbs., and consequently any steam pressure above 9 lbs. on a piston of half the area would suffice to run this piston, without regard to the final reservoir pressure. As the smaller air piston is the same area as the steam piston, a final reservoir pressure can be attained nearly equal to the boiler pressure if desired. In a single-cylinder air pump the resistance in the air cylinder



varies each stroke from nothing to the extreme pressure in the reservoir. The steam piston, therefore, must have sufficient area to produce this final pressure and expel the air into the reservoir.

During a series of tests there was a notable absence of pounding in the duplex pump. This is said to be due to the fact that the resistance to each piston is proportioned to the steam used, and there is no excessive speed in the early part of the stroke.

In designing a new pump, the Eames Company have endeavored to adopt from other pumps those parts that have stood the test of long service, and have omitted everything that was liable to give trouble. There are but two sizes of pistons and packing rings, viz., 5 in. and 7 in. diameter. The steam valve gear is reduced to two plain slide valves, in a direct line with the piston rods, and actuated positively by them. The air valves are simple poppet valves, which seat by gravity while the piston is at rest, and, therefore, are not liable to pound. All steam and air valves are accessible, and may be examined by unscrewing plugs without taking down the pump.

The Old Pennsylvania Canal Abandoned.

A dispatch from Huntingdon, Pa., says: "The old Pennsylvania Canal, which for 60 years was a means of commerce and travel from one end of the state to the other, is now practically abandoned. Regular and heavy financial losses have attended the operation of the canal for several years past, and now that it is owned by the Pennsylvania Railroad Co., which carries all the tonnage formerly transported on the canal, the decision has been reached to allow the canal property to go to ruin. There is no desire, it seems, on the part of its owners or the public to save it. The canal has been abandoned to Newton Hamilton from the west. The flood abandoned the rest of it. Since the flood some of the destroyed banks have been rebuilt east of Newport, Perry County, and the canal has been reopened as far as the Millerstown dam, but its doom is sealed, and it will never be used further up the river.

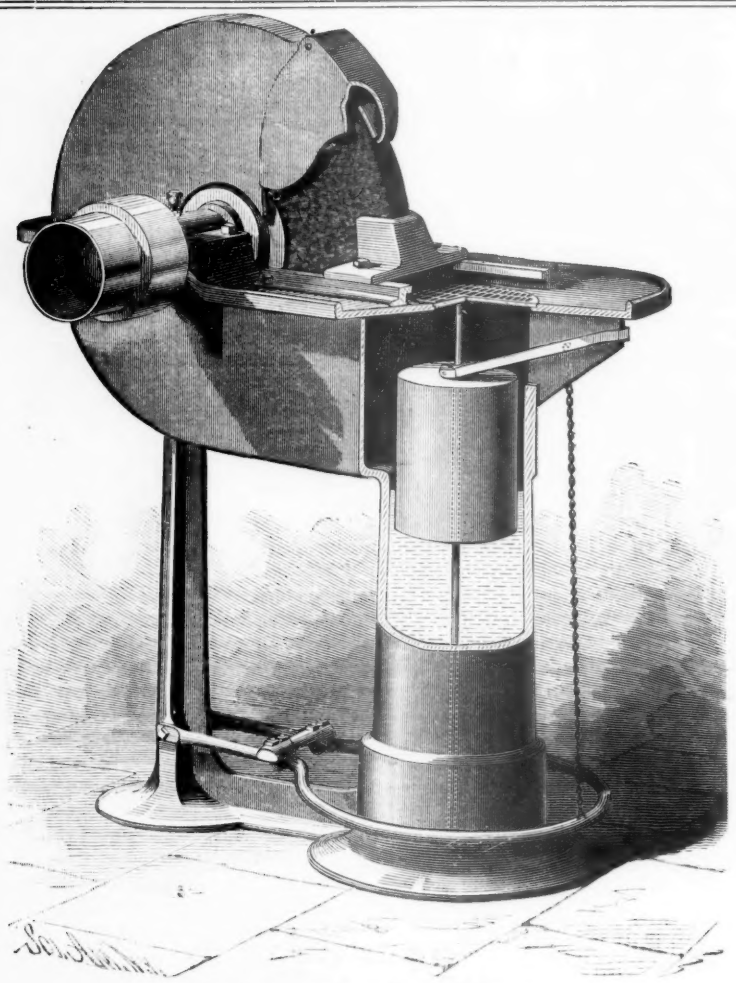
"As a connecting link between the East and the West it once did a very large business. From 1830, the year in which it was first put in operation, until 1850, when the Pennsylvania Railroad completed its line from Philadelphia to Pittsburgh, the canal was the sole means of transportation for passengers and freight across the country. By the aid of a portage road and section boats the invention of the late John Dougherty, of this county, the difficulties of passage over the Allegheny Mountains from Hollidaysburg to Johnstown were surmounted, and a complete line for traffic was established. From 1850 until the present year the canal was still maintained throughout a portion of its route for carrying coal, ore, stone and lumber.

"From this city westward to Petersburg the canal was entirely destroyed by the overwhelming floods of last June, and for 29 miles east of this place it is practically in the same condition. The channel is now hidden by a ruinous mass of débris and rocks, which, in many places, is leveled up even with the banks on either side. At this city, Mount Union, Mapleton and intervening points the Pennsylvania Railroad Co. is surveying certain sections of it, with a view to transferring the railroad tracks from the present roadbed to the bed of the abandoned canal, in order to do away with many sharp curves. By next spring these improvements will have been completed.

"Since the abandonment of the canal in the central portion of the State dynamite has been successfully used on the river dams in blowing them to pieces, with the view of making an unobstructed river channel in the event of another great flood. This will greatly diminish the chances of damage to the roadbed of the Pennsylvania Railroad. With the removal of bridges, aqueducts, lines of stone walls, etc., the last vestige of the famous old canal will soon be gone."

Australian Railroad Notes.

A letter in the London *Economist*, signed "An Ex-Member of the Legislative Assembly of New South Wales," states that, in spite of the very heavy borrowing for railroads and other public improvements by "the Mother Colony," £24,352,000 in eight years, and complaints that railroad expenses have been debited to cap-



BARNES' WATER EMERY GRINDER.

ital account which should have been charged to working expenses, neither the roadbeds nor rolling stock have been maintained in an efficient state; experts appointed by the Railway Commissioners reporting that it will take £1,400,000 to put them in good order. And the writer, in fact, warns the investing public against an attempt to borrow this money in England.

The railroads of New South Wales, which were all built by the government, do not pay, as pointed out by a correspondent of the *Economist*, and probably will not until the country has a greater population. If these roads had been built by private parties the government would not be in danger of default, or at least in the face of a deficiency placed by a correspondent at £2,200,000. Private parties, however, would not have risked their money without some such aid as that afforded by land grants.

The colony of Victoria is proposing to negotiate another loan of £10,000,000 to be expended in providing additional railroads and internal improvements. Not more than one-third of this loan is to be called for in any one year.

The income derived from the Victoria roads for the last year was £3,110,140, with an average mileage for the year of 2,144 miles (as against £2,750,049 for the year before); 37.44 per cent. of the first-mentioned sum was net earnings. After paying the interest on the loans, there was a net profit of £34,060 after a reduction of freight rates estimated as equal to £50,000. The net returns on the money borrowed and expended on all lines open for traffic was 4.4 per cent. and 3.73 per cent. on all the money expended on lines either open for traffic or in the course of construction. The number of passengers carried was 68,904,427 an increase of nearly 13,000,000 over the passengers carried in the preceding year, and the tonnage, freight and live stock was 4,160,123 an increase of 506,084 tons.

The completion of the Palmerston & Pine Creek Railroad, 146 miles long, marks a step in the construction of the Australian Transcontinental line, which has been undertaken by the South Australian Government.

This road cost £1,086,632 ($36,320 per mile) of this £605,424 was for grading, £189,465 for superstructure, leaving over 27 per cent. for interest, etc.

Barnes' Water Emery Grinder.

The figure shows an improved method of mounting an emery wheel which is to be used with water. The wheel is covered, except at an opening where the work is placed, by a metal case, and a water reservoir is connected to this case; a small hole in the bottom of a partition between the casing and reservoir permitting water to enter the casing slowly, when the level is sufficiently high, and to flow back from the casing into the reservoir when the water level is lowered. The water reservoir contains a float connected to a treadle, and by pressing this treadle the float is lowered and displaces water so that the level rises and allows water to enter the casing. On releasing the treadle, the float rises and the water level falls below the hole in the partition between the casing and reservoir.

The water admitted to the casing when the float is depressed is carried by the emery wheel to the front upper quarter, where it is thrown into a pocket (shown by the broken lines in the figure), whence it falls on the wheel at the point where the work is situated.

This style of mounting is convenient for general use, and is particularly suitable for shops where there is no system of water pipes. It is made by the W. F. & John Barnes Co., Rockford, Ill.

Train Accidents in October.

COLLISIONS.

REAR.

1st, on Houston & Texas Central, near Millican, Tex., a freight train broke in two and the rear portion was run into by a following freight, wrecking engine and six cars. Engineer injured.

1st, on Chicago & Northwestern, at Eau Claire, Wis., a locomotive ran into the rear of a freight train, wrecking several cars and disabling the engine.

2d, on Lake Erie & Western, near Arcadia, O., a freight train broke into three parts. The last and middle sections collided, wrecking several cars. Conductor killed.

2d, on Hannibal & St. Joseph, near North River, Mo., freight train ran into the rear of a preceding freight.

3d, on Union Pacific, near Roscoe, Neb., a passenger train ran into the rear of a freight train which had broken down, damaging the engine and caboose. Engineer injured.

3d, on Baltimore & Ohio, near Whitehall, Pa., a freight train broke in two, and the two portions afterward collided, wrecking several cars and damaging the draw rigging of a number of others.

3d, on Lake Shore & Michigan Southern, at Holmesville, Ind., a freight train broke in two and the detached portions collided, derailing 15 cars, a number of them being badly wrecked.

3d, on Pittsburgh, Fort Wayne & Chicago, near Haselton, O., a freight train ascending a grade broke in two and the detached portion ran back and collided with a following locomotive, which, with several cars, was wrecked. One trainmen killed, one injured.

4th, on St. Louis & San Francisco, near Northview, Mo., a freight ran into the rear of another freight, disabling engine and wrecking seven cars. Five trainmen injured.

6th, on Michigan Central, near Mattawan, Mich., passenger train ran into a preceding passenger train. Locomotive disabled and three sleeping cars damaged, one of which took fire.

6th, on Western New York & Pennsylvania, near Corry, Pa., a freight train broke in two while ascending a grade, and the rear portion ran back and collided with a following passenger train. Three trainmen and one passenger injured.

7th, on Missouri Pacific, near Astor, Kan., a freight train ascending a grade broke in two, and the rear portion ran back and collided with a following passenger train. The caboose and a box car were wrecked, took fire and were destroyed. A man riding in the caboose was burned to death.

7th, on Chesapeake & Ohio, at Goshen, Va., a freight train was run into at the rear by an empty engine, smashing the caboose. A man riding in the caboose was killed.

7th, on Wisconsin Central, near Highbridge, Wis., a freight train was run into at the rear by a construction train owing to the carelessness of the runner of the latter. Engine and several cars wrecked. One trainman injured.

7th, on Union Pacific, near North Platte, Neb., passenger train ran into the rear of a freight train, damaging engine, caboose and several cars. One trainman injured and a tramp killed.

7th, on Burlington & Missouri River, near Germantown, Neb., a freight train broke in two and the detached portions collided, wrecking three cars.

7th, on Philadelphia & Reading, at Dowdentown, Pa., a freight train broke in two and the rear portion collided with a following freight train, wrecking engine and 15 cars.

8th, on Kansas City, Memphis & Birmingham, at Birmingham, Ala., a passenger train ran into a coal car which had been left standing on the main track, derailing engine and baggage car.

9th, on Richmond & Danville, near Danville, Va., a freight train broke in two and the rear portion collided with the forward one, wrecking three cars. One trainman killed and another injured.

10th, on New York, Lake Erie & Western, near Stevens Point, Pa., a freight train ran into the rear of a preceding freight, wrecking an engine and seven cars. The flagman of the forward train failed to go back far enough.

11th, on Baltimore & Ohio, at Fredericktown, O., a freight train collided with some box cars standing on the main track, and was in turn run into by a closely following freight. Engine and six cars damaged.

12th, on Clearfield & Jefferson, near Mayes Summit, Pa., a freight train ran into the rear of a preceding freight on a curve, doing some damage. Three trainmen injured.

14th, on Delaware & Hudson Canal Co.'s road, at Crown Point, N. Y., passenger train ran into the rear of a freight, damaging the front end of the engine and the caboose. One trainman injured.

14th, on Michigan Central, in Detroit, Mich., a switch engine ran over a misplaced switch and into some coal cars standing on a siding. Several cars wrecked and engine badly damaged. Engineer and fireman scalded to death by escaping steam.

14th, on Burlington & Missouri River, near Greenwood, Neb., a freight train broke in two and the two portions collided, doing slight damage.

16th, on Pennsylvania, in Philadelphia, freight train ran into the rear of another freight, damaging engine and six cars.

16th, on Boston & Maine, at Andover Plain, Mass., a freight train broke in two and the rear portion was run into by a following freight train, ditching the locomotive and three cars. The brakeman did not go back far enough.

16th, on Lehigh Valley, near Hazelton, Pa., a locomotive ran into the caboose of a construction train, smashing it, injuring three laborers.

17th, on Union Pacific, near Echo, Wyo., freight train ran into the rear of a preceding freight, wrecking several cars. Conductor injured.

17th, on Northern of New Hampshire, near West Canaan, N.H., passenger train ran into the rear of a freight train going onto a siding, doing considerable damage. The engineer did not keep a good lookout.

18th, on Chicago and Northwestern, near Wilson, Wis., freight train ran into the rear of a preceding freight, wrecking an engine and 13 cars.

18th, on Pennsylvania, at Millstone Junction, N. J., a freight train, the engine of which had stopped at a water tank, was run into by a following freight, wrecking five cars. The wreck took fire and was partially consumed.

20th, on Minneapolis, St. Paul & Sault Ste. Marie, at Bradley, Wis., a freight train ran into the rear of a preceding freight standing on the main track, damaging the caboose. Conductor killed.

22d, on Fitchburg road, at Shirley, Mass., a freight train ran into the rear of a preceding freight at a curve. Engine and a number of cars wrecked, blocking the track for six hours.

22d, 10 a. m., on Louisville & Nashville, at Nolin, Ky., an express train ran into an accommodation train moving in the same direction, which was being pushed by a locomotive in the rear. Both engines wrecked, the car ahead of engine of accommodation train partially telescoped, and the ends of baggage car and one coach of express train badly jammed. One passenger killed, three trainmen and nineteen passengers injured.

23d, on Houston & Texas Central, at Waller, Tex., a freight going on to a side track was run into at the rear by another, doing considerable damage. Conductor killed. A dense fog prevailed at the time.

23d, on Chicago & Northwestern, at Ralston, Ia., a freight train was run into by a special stock train at the rear; engine, caboose and two cars wrecked. The caboose stove set fire to the wreck, which was consumed. One trainman injured. There was a dense fog at the time.

24th, on New York Central & Hudson River, at Buffalo, N. Y., a freight train ran into the rear of another freight, wrecking engine, caboose and six cars.

26th, on Denver & Rio Grande, near Ojo, Col., a passenger train in descending a steep grade was not controlled and dashed into the rear of a preceding freight, doing considerable damage.

27th, on Union Pacific, near Topeka, Kan., freight train broke in two and the rear portion ran into the forward one, wrecking three cars.

27th, about midnight, on Louisville & Nashville, at Pelham Station, Ala., a freight train stopping at a water tank was run into by a following freight, wrecking engine and caboose. One trainman killed and another injured. The engineer of the colliding train claimed that owing to a heavy fog he had lost his bearings.

28th, on Western of Alabama, at Montgomery, Ala., a freight train ran over a misplaced switch and into some box cars standing on a siding. Engine and several cars wrecked. Two trainmen injured.

28th, on Pennsylvania, at Claremont, Pa., a freight train ran into the rear of a preceding freight, damaging engine, caboose and half a dozen cars.

29th, on Georgia Railroad, near Camak, Ga., a freight train broke in two and the detached portions collided, wrecking three cars.

29th, on New York, Lake Erie & Western, near Otisville, N. Y., 15 cars of a westbound coal train which had stopped to do some switching were left standing with the brakes off and ran back down the steep grade and into the head of a following freight. They attained a very high speed, and 24 cars were completely wrecked, together with the engine. The wreck took fire from the locomotive firebox and much of it was burned up. Both tracks were blocked, and an eastbound fast stock train was only stopped by the alertness of one of the injured brakemen, who got hold of a switch lamp and gave the danger signal just in season. The rear brakeman of the runaway freight was asleep in the caboose and was killed. One other trainman was killed and two others injured.

29th, on Chicago & Northwestern, near Marquette Mich., two gondola cars on a spur leading to a mine got away and ran down the heavy grade and onto the main track to Partridge Siding, three miles below, where they dashed into the rear of a freight train, doing considerable damage.

29th, on Baltimore & Ohio, near Canton Station, Md., a passenger train ran into an engine and two freight cars preceding it, derailing and damaging the passenger engine and wrecking the freight cars. It is stated that the freight displayed no tail lights.

29th, on New York, Lake Erie & Western, at White Bridge, N. Y., the rear portion of a coal train which had stopped to do some switching got away from the trainmen and ran down for some distance and into the head of a following freight. Engine, caboose, and several cars wrecked. The burning coals from the engine set fire to the wreck and it was destroyed.

29th, on Chicago, Rock Island & Pacific, near Seneca, Ill., a passenger train ran into the rear of a preceding passenger train, damaging the rear (dining) car of the former and the engine and baggage car of the other train. Engineer and two passengers injured.

30th, 7 A. M., on Pittsburgh, Fort Wayne & Chicago, at Homewood, Pa., an eastbound limited passenger train moving backwards for the purpose of taking the west bound track at a crossover, in order to avoid an obstruction caused by a freight train, collided with a following eastbound freight. The observation car at the rear of the express and the engine and a number of freight cars were badly damaged. Freight brakeman killed, engineer and fireman injured. The observation room was unoccupied at the time of the accident.

30th, on Central of New Jersey, near Easton, Pa., passenger train ran into the rear of a freight. Engine, baggage and express cars, caboose and 10 freight cars wrecked.

30th, on Chicago, Rock Island & Pacific, at Sparland, Ill., an accommodation train standing at the station was run into at the rear by a freight train, badly damaging the rear car and the engine. Two passengers injured.

31st, on Baltimore & Ohio, near Mt. Moriah, Pa., freight train ran into the rear of a construction train, derailing and damaging engine and two cars. Fireman injured by jumping.

31st, on New York Central & Hudson River, at Hudson, N. Y., a freight train ran into the rear of a preceding freight standing in the yard, wrecking caboose and four cars. It is said that the engineer of the colliding train disregarded signals.

31st, on Philadelphia & Reading, near Mingo Station, Pa., freight train ran into the rear of a preceding freight, wrecking several cars. Fireman injured.

BUTTING.

3d, on Louisville, Evansville & St. Louis, at East St. Louis, Ill., an engine pushing a stock car collided with a switching freight backing out of a siding. The stock car was derailed, thrown over an embankment and wrecked, killing a number of valuable horses. Five trainmen and two men in charge of horses injured. It is reported that one of the trains did not display the proper lights.

4th, 10:30 p. m., on Buffalo, Rochester & Pittsburgh, at Lime Rock, N. Y., butting collision between westbound freight train No. 25 and an eastbound extra freight. Both locomotives and 20 cars wrecked. Train 25 of the previous day had been annulled. As trains retain their rights for 24 hours the extra received notice of this annulment. The conductor and engineer receiving this order say that they thought it referred to train 25 of Oct. 4. It appears, however, that this would not excuse them, as, if the train of Oct. 4 had been annulled, they would still have needed an order to permit them to proceed against the train of the previous day, as it was only about 20 hours late at the time the order was received.

4th, on Cincinnati, New Orleans & Texas Pacific, near Rockwood, Tenn., butting collision between freight and accommodation trains, doing slight damage.

4th, on Baltimore & Ohio, at Boyd's, Md., the engine of a passenger train struck and knocked off the cylinder head of a locomotive of a freight train which had failed to back far enough onto the siding to clear the main track.

4th, on Columbus & Western, near Irondale, Ala., butting collision on a curve between a construction train and an empty engine, badly wrecking both engines. Two trainmen injured.

5th, on Denver, Texas & Fort Worth, near Pueblo, Col., butting collision between two freight trains, wrecking both engines and 10 cars. Fireman killed, engineer injured.

5th, on Northern Pacific, near Avon, Mont., butting collision between a passenger train and a helper engine, wrecking both engines and injuring a trainman.

6th, on Western New York & Pennsylvania, at Hamlin, Pa., butting collision between two freight trains. Both locomotives and eight cars wrecked. One of the trains failed to stop at the preceding station as ordered.

6th, at Pueblo, Col., the engine of a Denver, Texas & Fort Worth freight train, which had just been replaced upon the track after being thrown in the ditch in a wreck, started uncontrolled and ran down grade some distance, colliding with an Atchison, Topeka & Santa Fe freight train entering the yard, doing considerable damage.

6th, on Northern Pacific, near Helena, Mont., butting collision between a passenger train and an empty engine, disabling both machines. One trainman and two passengers injured.

7th, on Chicago, Burlington & Quincy, near Gladstone, Ia., butting collision between two freight trains. Engines and five cars wrecked.

9th, on Central of New Jersey, at Newark, N. J., a passenger train which was being run into the station by a flying switch ran over a misplaced switch and collided with an eastbound freight train, tearing off a portion of the side of a passenger car. Engineer and one passenger injured.

11th, on Knox & Lincoln, near Rockland, Me., a passenger train ran over a misplaced switch and into a freight car loaded with granite standing on a side track, disabling the engine.

11th, on Union Pacific, near Schwander's, Col., butting collision between passenger train and light engine. Fireman injured by jumping.

11th, on Cleveland, Lorain & Wheeling, near Bridgeport, O., butting collision between a coal train and a train consisting of engine and two box cars, containing miners, doing considerable damage. Four miners injured. The crew of the coal train forgot that they were running upon the other train's time.

12th, on Cleveland, Cincinnati, Chicago & St. Louis, near Cincinnati, O., butting collision between a freight and a wrecking train, due to misinterpretation of orders. One trainman killed, one injured.

15th, on West Shore, at Newburg, N. Y., butting collision between a passenger and a freight train, damaging both engines.

15th, on Southern Pacific, at Weimar, Tex., butting collision between two freight trains, disabling both engines.

18th, on Louisville, New Orleans & Texas Pacific, at La Place, La., butting collision between two freight trains, wrecking the forward portion of both.

18th, on New York, Lake Erie & Western, at Buffalo, N. Y., a string of freight cars was pushed over a misplaced switch and collided with a locomotive, wrecking several cars. One trainman killed. The switch light had gone out and the switch tender had taken it into his shanty to relight it, but neglected to properly set the switch.

18th, on Central of Georgia, near Verbena, Ga., butting collision between an accommodation train and a freight, doing considerable damage. The crew of the latter was running against orders, having forgotten all about the other train.

19th, on St. Louis, Alton & Springfield, at Challacombe, Ill., butting collision between two passenger trains, one of which approached the station at uncontrollable speed. Both engines disabled.

22d, on Fall Rrook Coal Co.'s road, near Waterville, Pa., butting collision between two freight trains, wrecking both engines. Three trainmen injured. Conductor and engineer of one of the trains forgot about the other.

23d, on New York, Pennsylvania & Ohio, near Bear Lake, N. Y., butting collision between freight trains, wrecking both locomotives and 10 cars.

24th, on Burlington & Missouri River, at Rulo, Neb., butting collision between passenger train and switching engine, damaging both locomotives.

25th, on Ohio & Mississippi, at Holton, Ind., butting collision between passenger and freight trains, due to a misplaced switch. Both engines and several cars in each train damaged. One passenger injured.

25th, on Chicago, Milwaukee & St. Paul, near Ventura, Ia., butting collision between passenger and freight trains. Both engines and five freight cars damaged.

25th, on Ohio River road, at Parkersburg, W. Va., butting collision between passenger and freight trains, disabling both engines and derailing several cars.

26th, on Union Pacific, near Cheyenne, Wyo., butting collision between passenger and freight trains, damaging engine and several cars of each train.

28th, on New York, Lake Erie & Western, near Hawley, Pa., butting collision between a passenger train and a freight. Both engines were disabled and the forward cars in each train damaged. Four trainmen injured. A man sent to flag the passenger misunderstood his instructions.

28th, on Chicago, Milwaukee & St. Paul, near Greendale, Ia., butting collision between eastbound passenger and westbound freight, due to the former running in violation of orders. Both engines were demolished, and the express, baggage and smoking cars were wrecked, set afire and burned up. One trainman and one passenger killed, three trainmen injured.

29th, on Baltimore & Ohio, at Washington, Pa., butting collision between passenger and switching freight trains, damaging engine and several freight cars.

30th, 1:30 a. m., on Norfolk & Western, near Thaxton's, Va., butting collision between passenger train No. 2 and freight, second 57, wrecking both engines, the baggage, mail and express cars and five freight cars. The freight had an order giving it until 1:20 a. m. to run to Buford for No. 2, but the conductor and engineman ran past the proper meeting point, under the impression that the order gave them until 1:40, although the message had been read aloud by them to the operator, and read correctly. Fireman, brakeman and one tramp killed, two trainmen injured.

31st, on Pensacola & Atlantic, near Milligan, Fla., butting collision between passenger and freight trains, owing to an operator's failure to deliver orders. Forward portions of both trains wrecked. Fireman killed.

CROSSING AND MISCELLANEOUS.

2d, 7 p. m., on Boston & Albany, at Riverside, Mass., engine of eastbound freight ran into some cars of a westbound freight, which had been placed on the eastbound track to make way for a passenger train. The eastbound train was engaged in switching, and the conductor ordered the engine to move forward without informing the runner of the presence of the obstructing cars in front of him. Three cars derailed and one of them wrecked.

7th, at the crossing near Dubuque, Ia., an Illinois Central passenger train was run into by a Chicago, Milwaukee & St. Paul freight, damaging the mail car. Postal clerk injured.

7th, on Union Pacific, near Laramie, Wy., a work train moving backward collided with some box cars, killing a laborer and injuring two others.

7th, on Michigan Central, near Kalamazoo, Mich., an eastbound passenger train struck and damaged the two rear cars of a westbound passenger train, which was going on to a siding.

9th, on Cumberland Valley road, near Hagerstown, Md., passenger train ran into a freight train switching across the main track. Engine and four cars damaged.

10th, on Evansville & Terre Haute, near Evansville, Ind., passenger train collided with some freight cars which were being switched across the main track, doing some damage.

11th, on a yard track in Lansing, Mich., a Lake Shore & Michigan Southern freight collided with a Michigan Central freight, badly wrecking both engines and a number of cars. Both locomotives were ditched, and a box car was flung bodily on top of the Lake Shore & Michigan Southern engine. The car struck on the whistle, and the wrecked engine kept up a prolonged and dismal shriek for fully five minutes after the accident. In clearing away the wreck the hoisting beam of a steam derrick broke and fell, killing two trainmen and a machinist.

12th, on Denver, Texas & Fort Worth, at Falcon, Col., the engine of a freight train backing onto a siding was struck by a light engine before it cleared the main track. Both engines disabled. Three trainmen injured.

14th, on International & Great Northern, at Galveston, Tex., a passenger train collided with a switching freight train, damaging engine and several cars.

15th, at the crossing in Jacksonville, Ill., collision between Chicago & Alton and Jacksonville & Southeastern freight trains, wrecking both engines.

15th, on Burlington & Missouri River, at Gibson, Neb., a passenger train passing from single to double track was run into by another passenger train coming off the double track whose speed was not controlled. Two cars were derailed and overturned, one of which caught fire. One passenger killed and three employés and 12 passengers injured, some of them being slightly burned.

16th, on Indiana Midland, at Heath's, Ind., a switching freight train pushed by a locomotive struck the end of a car projecting over the main track from a siding, derailing and wrecking a number of cars. One trainman killed, 2 injured.

17th, on Pennsylvania, near Manayunk, Pa., collision between switching freight and a yard engine.

18th, at the crossing in Fremont, Neb., a Fremont, Elkhorn & Missouri Valley freight ran into a Union Pacific freight, wrecking an engine and six cars.

20th, on Fall Brook Coal Co.'s road, at Cedar Run, Pa., a freight train collided with a construction train backing out of a siding on to the main track. The caboose was overturned, injuring a laborer.

20th, at the crossing in Kansas City, Mo., a Kansas City, Fort Scott & Memphis freight ran into a Missouri Pacific locomotive, overturning the latter and damaging four cars.

21st, on Baltimore & Ohio, at Bay View Junction, Md., collision between freight train and switching engine.

22d, on Rome, Watertown & Ogdensburg, at Forest Lawn, N. Y., collision between freight and gravel trains.

28th, on Boston & Maine, near Ballardvale, Mass., a special passenger train conveying the Massachusetts Railroad Commissioners ran into the side of a freight train moving in the same direction crossing the main track. Engine disabled, two cars of passenger train and six box cars damaged.

29th, at the crossing at Youngstown, O., a Pennsylvania freight ran into a New York, Pennsylvania & Ohio freight, doing some damage. There was a dense fog at the time.

29th, on Chicago & Northwestern, at Chicago, Ill., passenger train collided with a switching engine during a heavy fog. Both engines slightly damaged.

DERAILMENTS.

DEFECTS OF ROAD.

3d, on Union Pacific, near Cheyenne, Wyo., passenger train derailed and ditched by the spreading of the rails. Two trainmen and four passengers injured.

4th, on Columbus & Western, near Kellyton, Ala., freight train derailed and ditched by a broken rail. One trainman killed.

6th, on St. Paul & Duluth, near Smithville, Minn., a locomotive was derailed at a point where the roadbed had settled and thrown over an embankment. Engineer and fireman injured.

13th, at 11:14 a. m., on Pennsylvania, at Rahway, N. J., an eastbound express train running 45 miles an hour was derailed at a switch which was undergoing repairs. Three cars were derailed and the train was broken apart in two places, but the whole stopped within a few hundred feet, and no one was hurt, though two women fainted. The movable rail of a trailing-point split switch was left in such a condition that the weight of the driving wheels pressed it down about ½ in., and the drivers then crowded the stock rail out of gauge. The rails on one side were torn up for 400 ft.

18th, on Atchison, Topeka & Santa Fe, near Howell, Kan., the baggage car and two coaches of a passenger train were thrown from the track by a broken rail and upset down an embankment. Conductor and five passengers injured.

20th, on Chicago & Northwestern, near Marquette, Mich., engine and several cars of a freight derailed at a defective frog.

31st, on Chicago, Santa Fe & California, near Carrollton, Mo., all but the engine and rear car of a westbound passenger train was thrown from the track by the spreading of the rails, the roadbed having been impaired by heavy rains. The baggage car was thrown on its side across the track and two following cars were overturned in the ditch. Two trainmen and five passengers injured.

31st, on Indiana & Illinois Southern, near Sullivan, Ind., coal train thrown from the track by a broken rail and ditched. Engineer killed, a tramp injured.

DEFECTS OF EQUIPMENT.

2d, on New York, Providence & Boston, near New London, Conn., a flat car laden with track material broke away from a locomotive which was pushing it and ran down grade some distance to the Thames River bridge, where it plunged through the open draw into the stream.

6th, on Pensacola & Atlantic, near Magnolia Bluff, Fla., engine and baggage car of a passenger train derailed by the breaking of a flange of an engine wheel.

11th, on Chicago & Northwestern, near Syene, Wis., four cars of freight train derailed and wrecked by the breaking of a wheel.

14th, on Louisville & Nashville, near Brooks' Station, Ky., several cars of a freight train were derailed and wrecked by the breaking of a truck.

15th, on St. Louis, Iron Mountain & Southern, in St. Louis, Mo., three cars of a freight derailed and damaged by the breaking of an axle.

25th, on New York, Lake Erie & Western, near Wellsburg, N. Y., axle under a car of a freight train broke, ditching three cars.

28th, on Pennsylvania, at Rahway, N. J., six cars of a freight train were derailed, presumably by the breaking of an axle, and were wrecked. A flagman's shanty was knocked down, and an adjacent dwelling partially demolished. Flagman and two men standing near the track injured.

30th, on Lake Shore & Michigan Southern, at Wawaka, Ind., engine of passenger train broke a parallel rod while running at speed. One of the loose ends struck and broke a switch rod, moving the switch, and derailing the whole train, except the engine and tender. The cars followed the siding, tearing up the roadbed for some distance. Two coaches were thrown over on their sides, and two sleeping cars were partially overturned—all being considerably damaged. One passenger injured.

NEGLIGENCE IN OPERATING.

2d, on Boston & Maine, at Methuen, Mass., freight train derailed by a misplaced switch.

2d, on Hannibal & St. Joseph, at Ely, Mo., freight train derailed by a misplaced switch.

4th, on Ohio & Mississippi, near Shoals, Ind., some ties which had been insecurely loaded on a car of a construction train fell off upon the track, derailing and ditching a portion of the train. Of 27 laborers one was killed and 23 were injured.

4th, on West Jersey, in South Camden, N. J., in order to prevent a butting collision between a passenger and a freight train, due to a mistake in signaling, a switch was thrown in front of the latter, causing the engine to run off the track into a sand bank.

5th, on Union Pacific, near Breckenridge, Col., an empty engine descending a steep grade became uncontrollable and was derailed, going down a very high bank. The men escaped by jumping off. The account says that the engineer attempted to use the water brake and found it inoperative.

11th, on Terre Haute & Indianapolis, near Terra Haute, Ind., engine and one car of passenger train derailed by a misplaced switch.

14th, on Atchison, Topeka & Santa Fe, at Halliday, Kan., passenger train derailed by a misplaced switch.

Continued on page 807.

RAILROAD GAZETTE

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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

The papers before the American Society of Mechanical Engineers at the recent meeting in New York City indicate advance both in accuracy of thought and clearness of expression among its members. One of the most satisfactory features of the papers is the evident condensation made before their presentation. Another and a most agreeable feature to the engineer who appreciates smooth reading lies in the conclusions drawn at the end of the arguments. It is such a help to know just what the author is trying to prove or present, and what his conclusions are, before one reads the body of the disquisition, that concise statement of the logical results of the course of reasoning followed placed at the end of any paper are most welcome to the busy reader. Undoubtedly papers having such conclusions are better read and understood than those which do not have them. Some of the papers before the society are of an eminently practical nature which renders them useful to the manufacturer as well as to the scientist; and the Mechanical Engineers are to be congratulated upon the success of the meeting, both in regard to its educational as well as its social and other features.

So far as the published results of experiments with brake shoes in laboratories go, it is safe to say that nothing whatever is proved conclusively. Several facts have been indicated, but none followed to positive proof. In most cases the apparatus used is either too incomplete or too crude to give accurately the data essential to a satisfactory determination of the characteristics of a given material, and it will be wise to reserve all decisions regarding this important matter until after the committee appointed by the Master Car Builders' Association has made its report. That report now promises to be an exhaustive one, and will doubtless be made in such a manner as to give data that will be indisputable. Sweeping denunciations of any one style of shoe or kind of material are to be avoided, because the problem of the selection of the best from among the large number in more or less successful use has many different phases, and it may be that careful experiment will show that some of the more neglected features of the problem will, in the end, prove to be ruling ones.

It is stated that the breaking of a parallel rod on the St. Louis division of the "Big Four" last week caused the death of a fireman, in spite of the fact that the running-board over the rod was lined with a steel plate to prevent such a result from the breakage of side rods. The use of plates of cast iron, wrought iron, and steel for this purpose has been increasing of late, and such an accident as this should not delay further use thereof. While in some instances and with some such devices the parallel rods may do some serious damage, there is no possibility, when the running-board plates are made of sufficient thickness, of the fireman or the cab being seriously injured. For a high-speed locomotive these plates ought not to be less than a half inch in thickness, if of wrought iron or steel, and one and a half to two inches if cast iron. Some locomotives on the Boston & Providence division of the Old Colony road have running-boards of cast iron two and a half inches thick. In most cases wrought iron or steel plates a quarter-inch thick will be sufficient to furnish the necessary protection in case of breakage of the side rod, but it is best to provide for all possible emergencies and use plates not less than the above thicknesses.

In another column will be found an extract from a report of the Committee on Marine Engine Trials to the Institution of Mechanical Engineers of Great Britain. As these trials are to be made in actual commercial service, with the purpose of discovering the real efficiency of marine engines when in that condition of repair and method of operation which is readily obtainable in ordinary practice, they will be found interesting. The table given showing the comparative efficiency of the locomotive, the marine and the stationary engine according to different methods of comparison shows most forcibly the inefficiency of the locomotive as compared with the average stationary or marine steam plant. The ratios given for the locomotive are determined from the English engine, which works under much more favorable conditions than the American, hence it is fair to suppose that our locomotives would make a still less favorable showing. It is not, of course, to be expected that the locomotive can be made equal in efficiency to the stationary or to the marine engine, but these figures should remind us of the necessity for all possible improvement and of the careful attention needed to prevent undue waste in steam railroad motors.

We have received a copy of the report of Mr. E. D. Leavitt and Mr. F. W. Dean to the Strong Locomotive Co. on the tests made with the Strong engine on the New York, Lake Erie & Western. This report is voluminous, and contains much information of scientific interest. It shows that both the Erie and the Strong locomotives can do good work under unfavorable as well as favorable conditions. The work performed per pound of fuel used is quite as large for both the best Erie and the Strong engines as any that has come to our notice for some time past, and we hope to be able to present the information in condensed form to our readers at an early date. At the present time, however, a disagreement between the Railroad Company and the Strong Locomotive Co. as to the validity of the data in this report, and the methods of making comparisons, will not permit the drawing of conclusions which would be fair to either party or to the locomotives themselves.

It is gratifying to note the full attendance at the recent trunk line meeting, and the unanimity with which the members have decided to abolish passenger commissions. In this they are supported by representatives of the Central Traffic Association. It is to be hoped that they will carry the matter through. Nothing has given more color to the charge that railroad presidents did not really care for the interests of the stockholders than the retention of the commission system. In freight business they may claim that they could not prevent rate cutting even if they all acted together. In passenger rates no such claim is possible. Two years ago the effort to carry out this reform was defeated by one connecting road. Other events have occurred to make that road tired of anything like a free-lance policy. We now see nothing to prevent the reform from being carried out. There is no rational ground against it. If it does good to any one road it is almost entirely at the expense of others. If all practice alike, none gain. The claim that it makes passenger agents more attentive to their business, so that they will act as drummers for the passenger trade of the country as a whole, hardly amounts to anything. Whatever gain to the railroads and the public may come from this source is quite infinitesimal, as compared with the indirect harm. From the railroad standpoint, it is bad to lose all the profit on a hundred passengers for the sake of carrying fifty more at a loss. From the public standpoint, it is bad to make railroad tickets a matter of special bargain when the self-respecting man pays the highest rates, just for the sake of persuading a few people to travel who do not know their own minds sufficiently to do so until corraled by a ticket broker.

Chairman Walker has decided that the different parts of a through line cannot make divisions of the rate to suit themselves, but must consult competing lines. The case is specially noticeable because there was nothing inherently wrong about the proposed division. If the St. Joseph & Grand Island carried freight to St. Joseph, and some other line took it from that point to Kansas City, or any other point in Missouri, to deliver to the Alton for a further movement eastward, the Alton would, by long-established custom, allow the intermediate road 25 per cent. of the eastern division of the through rate. The St. Joseph & Grand Island now proposes an arrangement by which, instead of carrying the freight all the way to St. Joseph, it shall deliver it to the Kansas City, Wyandotte & Northwestern at Seneca, which can deliver it at Kansas City direct. It is then proposed that the Alton should take the same share of the through rate as before; that the Kansas City, Wyandotte & Northwestern should take the 25 per cent. which would otherwise accrue to the road carrying the freight from St. Joseph to Kansas City, or any other point on the Alton lines: and should in addition receive from 1 to 2½ cents per 100 lbs. out of the proportion which would otherwise go to the St. Joseph & Grand Island, which this road was quite ready to forego for the sake of avoiding the difficult haul east of Seneca. In other words, the railroads wanted to cut off a corner and yet have the same aggregate share of the through rate which was given by custom to a roundabout line just because it was roundabout. Mr. Walker pertinently says:

> The pending proposition is a quite peculiar one; it is desired to give to the Kansas City, Wyandotte & Northwestern one-fourth of the revenue which would normally accrue to the eastern lines upon deliveries to them at the Missouri River. If the different links in any given through line should be left free to adjust between themselves their respective divisions of aggregate through rates, serious difficulties would arise, occasioned, among other reasons, by the fact that advantageous divisions conceded to a connection operate very strongly to control the traffic, and that each road has a large number of connections to bid against each other for its business.

Looking at the matter in this way, we have another aspect of the same difficulty which presented itself last week in speaking of car service. If one road lends cars for inadequate compensation, it will divert traffic to its own lines from those of its competitor. In self defense, other lines will often be forced to follow suit. As a result the eastern roads will suffer loss, while their western connections are saved the expense of building storehouses. An unfair division of through rates would have the same result, and would probably in the long run tend to produce a similar reduction in the aggregate profit of the railroads as a body.

Governor Richardson of South Carolina, in his annual message to the Legislature, refers to the question of separate accommodations for white and black people on railroad trains, and says there is no reason why separate and equal accommodations for the two races cannot be regularly afforded by the railroads, to the joint advantage of the roads and the public. He cites the instance of a recent state fair at Columbia where this was done with success. The Governor desires the repeal of the State civil rights law, which declares a railroad charter forfeited if the company makes any discrimination in the matter of accommodations on account of race or color.

The Governor's views are in line with those of the Interstate Commerce Commission, as expressed in the decisions on complaints of Mr. Heard, a colored passenger in Georgia. To afford cars of equal safety, convenience and comfort for the two races would be a simple solution of a vexed question, and these utterances from two different sources indicate perhaps the only successful solution possible; but neither the Commission nor Governor Richardson have explained how the railroads can do this with any practicable degree of economy. When there are crowds going to a great gathering like a state fair there is a good profit on each passenger, because the cars are well filled and engines can be fully loaded. But, as all Commissioners and Governors should know, the average passenger train is not very profitable, especially on roads of light traffic, like most of those in South Carolina. The average number of passengers carried on any passenger train is very much less than the number of seats available in such train. To provide for the the fluctuations in the number of passengers desiring to travel it is necessary to haul a large surplus space. This being so, every multiplication of the number of classes adds to the percentage of empty seats. Where, with a single class, a road provides one seat for a possible passenger, with two classes it must provide two seats, because it cannot tell beforehand which class the passenger will choose to ride in. Many trains in South Carolina can afford but a single car for all the passengers; to separate this into white and black smokers and white and black non-smokers necessitates four compartments, leaving a small margin for fluc

tuations in each class and showing at once the absurdity of the proposition. It is true that railroads often give much for little, affording accommodations of far greater elegance than the law or public sentiment demands, and it might be argued that if they can afford to be liberal with their patrons in luxuries they could with equal reason provide a surplus of room. But it is to be remembered that railroad officers are human. To put on an elegant new passenger car which can be finely illustrated on a folder is perfectly natural; but to provide clean towels, or to make the car sashes easily movable up and down, or to do any one of a hundred other things which would please the public but would not be accompanied by the least bit of glamor, does not come as second nature to railroad men—nor to any of us.

Fusee signals are not much used on roads of the United States, generally. In making this statement in an article printed in our issue of Nov. 15 the word *torpedoes* was, by a slip of the tongue or of the typewriter, used instead of *fusees*. The use of torpedoes is so common that the error did not, we trust, deceive the careful reader. But our statement is further criticised as to its substance. It appears that fusees are in use on some roads which we had not in mind at the time of writing, and that a number of them are in the Northern states, as will appear from a statement in another column of this issue. We believe it still to be true, however, that the use of this signal is properly to be regarded as exceptional. Many of the roads which now have fusees have introduced them very lately, and we do not learn that the signals have been placed in the hands of brakemen for common use. They cost twenty or thirty cents apiece, and most superintendents are chary about authorizing such expenditures by brakemen except under pretty definite restrictions.

But whatever the facts about the actual use of the fusee, it is true that this kind of signal is calculated to "fill a long-felt want," *where the block system is not used*; and another correspondent criticises our position as unfair by reason of its scant recognition of the merits of a signal which can be given while the train is in motion. On this point it is true that we spoke more at length from the standpoint of the superintendent, considering the matter in its practical aspects, rather than with reference to any theoretical advantage. We said that practical managers desire a signal which can be used under rules applicable at all times and in all places, while not denying that in the hands of an alert brakeman a good fusee is a desirable safeguard. We were speaking more especially with reference to a uniform rule and of practical methods of enforcing it, and, therefore, laid stress on the importance of of having no rules which cannot be enforced. It certainly is questionable to employ a fusee or any other signal which cannot be used according to rule, and the difficulty of formulating a good rule on the point under consideration still remains to be met. It is all very well to provide fusees on private cars and palatial "Limiteds," but railroads need some means of preventing collisions under ordinary, every-day circumstances. The front ends of passenger trains as well as the rear ends frequently get entangled with freight trains, and fusees are no help then unless supplied to all trains. Supplying them to, say, 100 trains, and in sufficient quantity, involves an expense of sufficient magnitude to at once raise the question whether the same money would not be better spent in block signaling. And after freely acknowledging all the merits claimed for the fusee, the contingencies of careless brakemen and of engineers who fail to keep a good lookout still remain, and we therefore still maintain that all devices or means for preserving a time interval must be regarded as makeshifts and compromises to be used only when one finds himself utterly unable to get a space-interval system. If our correspondent will again read the article of Nov. 15, he will find additional support for this statement.

The Secretary of the Railroad Department of the British Board of Trade has lately had occasion to address a somewhat sharp letter to the Secretary of the Railway Companies' Association, complaining that the promise of that association, made eleven years ago, to announce alterations in passenger train time-tables a week before putting them into effect, was being generally disregarded. The Board has received strong complaints from passengers, alleging serious inconvenience by reason of their inability to get information beforehand of intended changes, and this notwithstanding the fact that changes are always made on the first day of the month, so that the public can be on their guard and not go to unnecessary trouble except during the last few days of each month. The Board of Trade "cannot believe there is insuperable difficulty in publishing changes a reasonable time in advance." Though the railroads are interlaced in the most intricate manner, and changes, therefore, cannot be announced until all the roads of a certain territory agree to them, the Board "invites the association to make every effort" to do better.

The moral of this story lies in its application. The American public is noted for its disposition to distinguish itself as a long-suffering public, and puts up with inconveniences like those here mentioned in the same spirit with which it endures many others; but the American railroad public prides itself on providing improvements before they are asked for, and we therefore suggest this as an inviting field for the cultivation of that pride, or rather of the conduct on which it may be based. There are just two points to the problem, both very simple, if only they are kept in mind and regarded as worthy of being invariably maintained. First, change only on fixed periodical dates: second, announce these changes always in the same places, and always the same number of days in advance.

Retributive Justice.

Complaint is made from Sioux City that the Chicago & Northwestern builds its lines around minor trade centres instead of through them, the object of the railroad in pursuing such a policy being to secure the long haul to Chicago, instead of the shorter haul to local centres.

If the people of Iowa had left the Chicago & Northwestern free to charge what rates it pleased, this policy might have given them just grounds of complaint. It is undoubtedly true that railroad men sometimes try to divert trade into channels which will give them an unnecessarily long haul; and from the public standpoint this is as bad as the unskilled laborer's practice of "making work" by clinging to antiquated and wasteful processes. Any seeming gain from such unnecessary work proves a decided loss in the long run.

But the people of Iowa have not left the railroads free to make such rates as they pleased. They have made railroad business as a whole rather unprofitable, and have made some forms of railroad traffic distinctly so. The whole tendency of the short-haul principle has been to reduce local rates to a non-paying basis. If the long haul is the only thing which pays, the railroads will be forced in self-defense to develop their long-distance traffic and neglect the interests of intermediate points. In such a case it is not the railroads which distort the business into unnatural channels: it is the public which has done it by unwise legislation. The loss to the community is the same in either case, but, under Iowa legislation, the railroads are no longer to blame for that loss.

A few centuries ago it was the custom in England for public authorities to fix the prices of everything. Not merely transportation charges, but payments for bread and meat were regulated in this way. It was supposed that everything had its normal or natural price, corresponding to the cost of production: that butchers and bakers were likely to make undue profits by the wicked practice of charging what the traffic would bear; and that the government authorities should prevent extortion by fixing the rates which the consumers should pay. This system, as might be expected, often worked badly. The magistrates sometimes fixed the prices too low. Even in such cases the law was obeyed; for any man who charged illegal rates was liable to have his ears cut off, and suffer other things equally unpleasant. But, though the magistrates might fix the price, they could not insure the necessary supply. Their action produced an artificial scarcity, which caused vastly more inconvenience than would have resulted from a slight increase in the price. Gradually men came to understand that the best way to get the required supply was to leave the rates as nearly free as possible. The occasional instances of extortion under the system of commercial freedom did vastly less harm than resulted from the short supply of goods when the magistrates fixed prices too low.

We have abandoned the policy of making laws about grocers' charges. But the public has not yet learned to apply the same principle to railroads. Of course, the cases are not exactly parallel. Grocers' charges are largely regulated by competition; railroad charges are not. This furnishes a real reason for some legislation and a pretext for ten times more. It seems easy for a body of farmers or other local shippers to pass a law lowering rates, just as it seemed easy to the English magistrates a few centuries ago to make bread cheap by law. But the English law was liable to involve a short supply of bread; and the policy of Western legislation is equally liable to involve a short supply of railroads. The result is slower, but no less sure. If you insist on fixing the rates which a man shall charge, you may possibly prevent him from doing business at higher rates, but you cannot possibly compel him to do business at those rates. If you insist on such relative rates for short and long hauls as to leave no profit on the former, some people who want the short haul will have to go without it. The people of Sioux City are simply having an object lesson in the elements of political economy.

The Value of a Testing Department.

The position occupied by a mechanical test laboratory in railroad economy is a variable one, the variations largely depending upon the manner in which the operation of the laboratory is conducted. A testing department may be a serious obstruction to the economical operation of a railroad as well as a most valuable assistant. It may be badly managed or its teaching disregarded; while, on the other hand, if officers are well chosen and have a scientific education, and the results of the tests made by them are given full consideration in determining matters of policy or in the selection of material by the purchasing department, the most far-reaching benefits may accrue.

It is not to be supposed that every man who has a knowledge of railroad affairs will necessarily make a good workman in the ideal testing department. Such men are, as a rule, better qualified to derive the lessons from the experiments than to make them. The teachings of a railroad life are practical in a high degree, and are such as to develop the ability to draw conclusions quickly from a combined collection of data and general experience. From a general survey of indications a railroad man, with his judgment sharpened by experience, can often draw correct and valuable conclusions in small matters, even when the data is far too inadequate to allow the scientific man to grasp the subject definitely. It is this general practical training, coupled with the active life, calling for prompt decisions based upon insufficient information, that unfits the railroad graduate for laboratory work. On the other hand, his training is most valuable, and even absolutely necessary, to assist in drawing from the accurate results obtained in the laboratory conclusions which shall be useful in practical operation. To do good, accurate experimental work requires peculiar characteristics: eagerness for truth, deftness of manipulation, love of science, application to small details, natural watchfulness for errors in apparatus, and, above all, a scientific education that includes a knowledge of general experimental work, its requirements and its possible inadequacies. An experimenter is just as much a specialist as a chemist or a geologist. His education consists in the acquirement of a knowledge of the methods of manipulation of all sorts of instruments, their errors and their limitations. His labors on a railroad should result in the production of an absolutely scientific set of data, and such work should be expected from him. When his labors in any direction are completed, then the practical railroad man ought to be consulted, and together these almost opposite, but equally valuable and well-trained minds, should evolve from the result the proper lesson to be drawn for application to practical railroad work.

The days have gone by when pure "judgment" can alone be relied upon to furnish a satisfactory discrimination between competing devices and materials offered for use on railroads. The outward appearance and indications will not be found sufficient from which to determine the practical value either of designs or materials. Something more than this is necessary, because of the multitude of devices and the small differences between many of them when they are put into practical use. To such a degree has the difficulty of selection become enlarged that it is only by accurate tests and analyses in chemical laboratories that the probable value of most materials for practical use can be accurately determined before being put into service.

The value of early discriminations between competing devices is well illustrated by the recently reported results of trials of three different kinds of automatic M. C. B. standard car couplers on as many different roads. In each case these couplers were put into service wholly on representation, and after the expenditure of considerable sums of money, in one case in particular, the couplers failed in ordinary service. In each of these instances a majority of the defects developed in use could have been easily determined beforehand in a most ordinary testing laboratory. One coupler was found in service not to have the strength to resist pulling strains that are

often imposed upon the common link. These are not the only instances. The same might be said of the several draft gears. For instance, the Chicago, Burlington & Quincy recently tested various designs of draft rigging for its new furniture cars. While on the face of the designs and from the outward appearance they seemed about of equal strength, and, therefore, a choice was hard to make, yet when the results of the tests were presented, one design stood head and shoulders above the others, and there was no longer any doubt regarding the proper selection. So in regard to all manner of devices: we could cite instances where the mechanical and chemical laboratories have, when consulted, saved much time and money otherwise expended in costly experiments on a large scale. And in cases when ignored in the beginning the laboratory has, in the end, shown at small cost the causes of defects in devices which have failed in service. Brake shoes and beams, journal brasses and truck details, together with all devices where competition is a factor, should be subjected to the same class of tests and inspection as that now demanded by the best roads for boiler plate, springs, oils and fuels.

The English Iron Trade.

England is now, as the readers of the *Railroad Gazette* know, in what is supposed to be the commencement of an iron boom and general industrial prosperity. Some 18 or 19 months ago an improvement in the demand for open-hearth steel commenced, consequent on increasing shipbuilding orders. These orders led to a more general activity in all branches of the iron trade, an activity that was naturally communicated to all industries as it continued. But there was no increase in iron and steel exportations that could account for it. Since 1847 any great improvement in British trade and prices has been dependent on increased demand from foreign countries, generally from the United States In this case there has been no such increased demand, as will be seen from the following table of shipments of iron and steel from Great Britain in tons:

	1887.	1888.	1889.
First six months of	1,938,311	1,946,801	1,990,901
First ten months of	3,153,785	3,370,143	3,498,185

In fact, up to the end of September, there was no increase over 1888 worth mentioning, and there was a decrease from the exports of 1887. Up to Oct. 1 the increase in quantity of iron and steel exported in 1889 over that exported in 1888 was only 1.7 per cent. But the increase for the month of October over the same month last year was 22 per cent., and for October over September 19.2 per cent.; so the minds of the English iron masters are working easier.

The distribution of these shipments is partially shown below:

	Shipments by countries—in tons.		
	Oct., 1888.	Sept., 1889.	Oct., 1889
Germany	29,322	36,971	62,589
British North America	36,200	37,699	38,995
United States	55,283	49,219	42,395
Argentine Republic	30,745	29,857	40,454

The most noticeable increase, as will be seen, is in shipments to Germany, and that is greatly in pig iron. Germany's taking of English pig irons in October, mostly Middlesbrough, was 57,200 tons as against 32,587 in September of this year and 25,741 in October last year; so that she so far has paid England about one million dollars more for pig iron this year than last. It is the large increase of German purchases, mostly drawn from the Cleveland district, that has increased the price of Middlesbrough to 66s. as against Glasgow warrants at 63s. 3d. The Glasgow warrants are generally about 5s. above Middlesbrough prices.

The relation of this country to the boom in England is tersely expressed by the *Iron and Steel Trades Journal:* "Last month the quantity of pig iron shipped to America amounted to 6,607 tons, as compared with 11,175 tons in October, 1888, and 23,901 tons in the same month of 1887." Whether through the absence of opportunity to speculate in warrants or for other causes, there is nothing like a boom in this country, as pig iron here was fairly at $17, as against $15.77 at the same time in England. In fact, it is understood that at one time nothing but an unexpected rise in ocean freight prevented a large exportation of pig iron to England. But in spite of this there seems to be a very general feeling in English iron circles that we shall soon commence buying from that country.

In 1872 warrants for Scotch pig iron were at 100 shillings. It seems hardly possible they should attain that figure again, for in that year the aggregate production of the United States, England, and Germany was 10,748,469 tons, of which we made 23.7 per cent., and Germany 13.5 per cent. Last year the total make of those countries was 18,646,843 tons, of which we made 34.2 per cent., and Germany 22.3 per cent. The supply is increased and the sources of supply are better distributed.

There seems a general feeling, as far as can be learned, that though the present price is speculative to the extent that the furnacemen follow the rises in the warrant market, but neglect all falls in their quotations of prices, the prices will be maintained and improved on; as the orders for finished iron work which are booked ahead for four or five months are not being checked, except in shipbuilding, which may be due to the men's desire to get wages as high as in 1883.

One noticeable feature in England is the very general determination, which seems shared by both masters and men, not to increase the productive capacity of the country, the fear of overproduction being the growing factor in this determination. In this country, on the contrary, the annual capacity of the new furnaces building is over one million tons, and this expansion on our part seems justified by comparing the growth of furnace capacity with the increase of consumption.

October Accidents.

Our record of train accidents in October, given in this number, includes 112 collisions, 70 derailments and 8 other accidents; a total of 190 accidents, in which 51 persons were killed and 224 injured.

These accidents are classified as follows:

Collisions:		
Rear	56	
Butting	35	
Crossing and miscellaneous	21	
		—112
Derailments:		
Broken rail	3	
Loose or spread rail	3	
Defective frog	1	
Bad track	1	
Broken wheel	2	
Broken axle	3	
Broken truck	1	
Broken coupling	1	
Broken parallel rod	1	
Misplaced switch	11	
Bridge out for repairs	1	
Runaway train	1	
Bad loading	1	
Careless running	1	
Cattle on track	8	
Washouts	2	
Accidental obstruction	1	
Malicious obstruction	2	
Wind	1	
Purposely misplaced switch	2	
Unexplained	23	
		— 70
Other Accidents:		
Boiler explosions	2	
Miscellaneous	6	
		— 8
Total number of accidents		190

The causes of collisions, where given, were as follows:

	Rear.	Butting.	Crossing and other.	Tot'l.
Trains breaking in two	14	..	..	14
Misplaced switch	2	4	..	6
Failure to give or observe signal	5	1	..	6
Mistake in giving or understanding orders	..	9	1	10
Miscellaneous	13	3	4	20
Unexplained	22	18	16	56
Total	56	35	21	112

A general classification shows:

	Collisions.	Derailments.	Other.	Total.	P. c.
Defects of road	..	8	..	8	4
Defects of equipment	14	8	4	26	14
Negligence in operating	42	15	..	57	30
Unforeseen obstructions	..	16	4	20	11
Unexplained	56	23	..	79	41
Total	112	70	8	190	100

The number of trains involved is as follows:

	Collisions.	Derailments.	Other.	Total.	P. c.
Passenger	50	20	3	73	25
Freight and other.	164	50	5	219	75
Total	214	70	8	292	100

The casualties may be divided as follows:

Killed.	Collisions.	Derailments.	Other.	Total.	P. c.
Employés	20	20	3	43	84
Passengers	5	1	..	6	12
Others	2	..	..	2	4
Total	27	21	3	51	100
Injured.					
Employés	75	58	..	133	59
Passengers	46	42	..	88	39
Others	..	3	..	3	2
Total	121	103	..	224	100

The casualties to passengers and employés, when divided according to classes of causes, appear as follows:

	Pass. killed.	Pass. injured.	Emp. killed.	Emp. injured.
Defects of road	..	14	4	5
Defects of equipment	..	1	3	1
Negligence in operating	5	46	21	103
Unforeseen obstructions and maliciousness	..	23	8	10
Unexplained	1	4	7	14
Total	6	88	43	133

Thirty-six accidents caused the death of one or more persons, and 49 caused injury but not death, leaving 105 (58 per cent. of the whole) which caused no personal injury worthy of record.

The comparison with October, 1888 and 1887, shows:

	1889.	1888.	1887.
Rear collisions	56	42	35
Butting "	35	29	28
Crossing and other collisions	21	11	1
Derailments	70	58	49
Other accidents	8	6	4
Total "	190	146	117
Employés killed	43	45	20
Others "	8	75	14
Employés injured	133	120	50
Others "	91	103	59
Passenger trains involved	73	54	38
Average per day:			
Accidents	6.13	4.71	3.77
Killed	1.65	3.87	1.10
Injured	7.23	7.19	3.52
Average per accident:			
Killed	0.268	0.821	0.291
Injured	1.179	1.527	0.931

Passengers in passenger cars were killed in three cases this month, all collisions. They occurred on the 15th, 22d and 28th, and there was one fatality in each instance. The three other passengers killed were on freight trains.

Most fortunate escapes occurred in numerous cases, however. The derailment of a fast train by a freight-car door on the Philadelphia, Wilmington & Baltimore, the 12th, was perhaps the most notable. Fire broke out in the cars, and the presence of heaters and the absence of axes was severely criticised by local papers. Every intelligent freight-train man who knows of this accident will doubtless at once resolve to increase the vigilance with which he fastens doors and watches them while his train is moving; but it is a query how definite knowledge of such occurrences is to be conveyed to the thousands of men who need the lesson but do not yet fully appreciate its importance. Should not details of some accidents be more extensively published among trainmen? Why wait until their own experience burns in the necessary lessons? The Pennsylvania express derailed at Rahway, N. J., on the day following the above, came off still more fortunately, no one being seriously hurt. The mishap to the Limited at Homewood, Pa., the 30th, was of the usual character of collisions of that kind; the flagman failed to go back far enough or the freight approached too rapidly, or both. The published statement that the block system was in use at that point was incorrect. The causes of and remedies for collisions of this kind would, perhaps, be more widely known if one of the trains carried a state railroad commissioner or two, as was the case at Ballardvale, Mass., on the 28th. The freight was delayed, and the view was bad by reason of a curve; and these facts were published as in some sense explanatory. We are curious to see how far they will have weight with the commission.

Collisions are numerous this month. In four cases, possibly five, the bald statement is made that an engineer or conductor "forgot." At Thaxton's, Va., an order which had been read aloud was so poorly fixed in the minds of the engineer and conductor that they remembered the number of minutes erroneously. At Lime Rock, N. Y., dull apprehension of a nice point in the rules seems to have been the case. The wisdom of the Time Convention rule allowing trains but 12 hours' grace instead of 24 in which to fulfill their schedules is strongly justified by such a case as this.

One of the most distressing cases of the month was the derailment of a freight by wreckers at Kokomo, Ind., the 28th, where the wreck took fire and three trainmen were burned up. Three employés were killed in one other derailment, that of a construction train at Confluence, Pa., on the 19th. These trains often carry a good many men, and yet they are of a kind which in many cases show the most palpable lack of prudent care. One man was killed and 23 injured on another work train, as will be seen by the record (4th).

Eight trains were derailed by cattle this month, and three persons were killed in this class of accidents. A Pennsylvania train struck two cows on a high deck bridge at Media, Pa., the 9th, but fortunately threw them off into the creek. Not all these cases are on the poorly fenced roads of the West and South, and this source of danger is one that demands the most constant watchfulness. A Western paper makes the following comment on a recent accident:

"When Stephenson said it would be 'verra bad for the coo' that should get in the way of a railroad train, he implied that it would be of no consequence to the train. But it was a cow that threw a Northern Pacific express train down an embankment recently, killing the fireman, mortally injuring the engineer, putting 200 passengers in jeopardy, and costing the company a good many thousand dollars. Stephenson's retort was prompt, and has become famous, but it has its weak points."

A derailment that must have been somewhat ludicrous, seeing that no one was hurt, was that at New London, Conn., on the 2d, just before the new bridge was opened. We did not learn that the bath given the switch rails interfered appreciably with the festivities at the opening, but it is safe to predict that the man in charge of that car will hereafter see that he has a good brake when he lets a car down a grade with the engine behind it.

The tumbling of a locomotive down a bank in Colorado the 5th is attributed to failure of the water brake, but we suspect that the real cause was something else, as in the numerous cases where we are told that "the air brake failed." The collision at Lansing, Mich., the 13th, resulted in the death of two men, but the accident that killed them occurred the next day and is not exactly chargeable to the train accident. A Denver & Rio Grande passenger train began the season's record by being blown off the track by a high wind on the 13th. It is to be hoped that the proposed change of that road to standard gauge will be speedily carried out.

Two specially narrow escapes are related in newspaper clippings gathered during October. At Hamburg Junction, N. Y., telegraph operator McCoy turned a switch just in the nick of time to prevent a fast freight crashing into a standing train. Near Wallaceton, Pa., a butting collision was averted only by the circumstance that a small flag station stopped a train to load a little freight. A pay car going in the opposite direction had been given the right to the road, but the order had not been delivered to the freight.

Railroads in South Africa.

Mr. Edward Bates Dorsey, in a letter to a friend, calling his attention to an article in a South African newspaper, which discusses his paper, read before the British Association, on the superiority of American railroad rolling stock and methods of management, with a view

to the adoption of American practice in that country, says: "Many thousand miles must be built there in the near future, and America could get part of it if she tried. We should have a semi-monthly line of steamers running to Cape Town, Port Elizabeth, Durban and Delagoa Bay. I am now ordering freight from New York for South Africa via Liverpool.

"The discussion on my paper before the British Association has not been published. All here do their utmost to suppress any criticism on their railway practice. Even those who are fighting the railways for reduction of freight rates are afraid to say anything about American practice, for fear of showing to the outside world that American practice is the best, and, consequently, the Colonies and South America might buy their rolling stock in the United States."

The exports of steel rails to British Africa for the first ten months of this year were 24,567 tons, as against 11,510 in the same months of 1888, and 8,136 tons in 1887; and the *Financial News*, London, says: "The Transvaal is insatiable in its demand for implements, wrought and stamped hollow ware and mining machinery, and as yet gives no sign of being in any way satisfied with the enormous quantity of iron goods that has been imported from this country." Most of these articles can be produced here of better quality and more cheaply than in England.

The African continent will surely be opened up to the world by railroads. Caravans of cloth-carrying negroes will more surely fail than the prairie schooner failed to develop the latent wealth of the Rocky Mountains and quiet the Indians. There is now neither adventure nor large profits in railroad building in this country; but Africa offers a certainty of the one and a fair prospect of the other, while the engineers, contractors and laborers trained in the construction of Southern roads offer the most available agents for completing the task with the greatest speed and economy and the least danger to themselves.

The universal classification committee, consisting of representatives of the Trunk Line, the Central Traffic, the Western Freight and other railroad associations, which has been holding meetings at irregular intervals for a year or two in the effort to compile a unform freight classification for the whole country, has lately met at Washington, D. C., and given several days' work to its task. Another meeting will be held in February. Some of the prominent members of this conference speak of it in a more hopeful tone than we have heretofore discerned, and there is apparently a prospect that we may within a few months have a definite plan presented. As every one knows, the necessity for commodity rates and special concessions to certain classes of traffic is met with on every road, and constitutes a factor which cannot possibly be ignored. The attempt to make a uniform classification to be rigidly applied involves such radical changes in rates, both in the way of increasing and of decreasing them, that the sentiment has been almost unanimous against the practicabily of getting any plan that would work; the tedious adjustment of differences would turn out to be wasted. It yet remains to see how far this view may be modified. There are certainly many minor features in which all classifications might agree, and it is doubtless true that many items among the hundreds embraced in a full classification might be given some degree of uniformity in expression and arrangement, if nothing more. Various schemes have been presented embodying the use of percentage rates, with the hope of universally adopting the plan by which rates from the Atlantic seaboard to the great Central territory are readily changed on occasion without friction, but it does not appear that the necessary conditions can be availed of in other territory except by slow processes. The sum of the whole question is, whether the exceptions to uniform classification would be so numerous as to destroy the value of uniformity in such features as it may be possible to retain it in. The answer to this question is a hard one to give.

We show on another page an illustration of a simple audible signal to be used as an auxiliary to a semaphore. The problem of running trains safely during times of dense fog is much more pressing in England than here, and, as our readers know, enormous numbers of torpedoes are used on roads in the vicinity of London, a man being stationed at every one of the thousands of distant signals during every dense fog. But the principle involved is the same here as in England, and the remarks of *Engineering* on the subject as given in the description of the invention referred to place the whole matter in a nutshell so neatly that we give them here:

"The old objection, which has done duty so many times before, will, no doubt, be urged against this apparatus. It will be said that it will make the men careless; they will cease to look out for the signals, relying on the mechanism, and some day the mechanism will fail, and the result will be disastrous. The same plea was raised against signals themselves in the early days, and with still more force against the adoption of the block system. No doubt mechanical contrivances do engender a confidence which is likely to increase the severity of accident when the mechanism fails. But, on the other hand, iron and steel have an endurance far beyond that of flesh and blood; a few hours extra services now and then make no difference to them. By careful design the risk of failure can be reduced to a very small amount, and the device of making every form of breakdown put the apparatus into the position for blocking the line goes far to remove the last element of risk. It is notorious that engine drivers keep a very lax lookout along the line on roads where the absolute block system prevails, and it is equally well known that accidents have diminished in proportion as the block system has spread. In the case of the apparatus before us the objection that it would tend to carelessness could be evaded by keeping it exclusively for times of fog and throwing it out of action during clear weather. It would then be used sufficiently intermittently to prevent the men learning to rely upon it entirely."

The heavy rains of two weeks ago, which did much damage to the Erie and Northern Central roads and to other lines in that region, carrying off many temporary bridges which have done service since the June flood, as well as some iron structures, was followed last week by further heavy rains, which did damage in various places. The New York Central had a landslide at Troy, and the New York, New Haven & Hartford, and other roads, had washouts in Connecticut. A bridge was carried away at Union City. At Pattonburg, N. J., a moving train on the Lehigh Valley was struck and partly wrecked by a pump house which was swept down a bank by a landslide. An engineer in the pump house was killed, and the broken pipes flooded the adjoining tunnel with water and gravel, blocking the road all day. While the wreck was being cleared a large quantity of unwrecked arching fell and came near killing several men. Bad washouts occurred on the Boston & Maine in Maine and New Hampshire. Heavy snows have fallen in the West and delays of trains are reported from many points.

The Missouri, Kansas & Texas litigation is getting complicated enough to tax Judge Brewer's best powers of reasoning. If so much legal talent is required to settle the rights of the case, the chance of having any valuable rights left to settle becomes more remote. When one party asks that $25,000 belonging to the railroad be appropriated to his side as counsel fees, and another demands similar sums for it as trustee, we have a promising beginning. A man may pay fees on one side, but it seems rather hard to be taxed to pay both sides at once. Readers of Dickens will remember the great case of Jarndyce *versus* Jarndyce, which was for a long time a monument of English legal wisdom, but which finally stopped in the middle of a morning, because the whole property had been used up in lawyers' fees. When Mr. John Jarndyce heard of this, he philosophically said that it was better luck than he expected to have done with the suit on any terms. Let us hope that the M., K. & T. property will not come to this pass.

The New York Central has shortened the time of its new Southwestern Limited, starting it now from New York at 10:50 a. m., two hours later than before. It arrives at St. Louis at six o'clock the following evening. The fast mail continues to leave New York at 8:50, the train being converted into a "New York State Express," having drawing-room cars for Canandaigua and Buffalo. The old Chicago express, which for years has left at 10:30 a. m. and reached Chicago at six o'clock or later the following evening, has been accelerated; it now leaves at 11:50 and reaches Chicago by the Michigan Central at 4:35 the following afternoon, making the running time nearly as short as that of the train leaving at 6 p. m.

It is impossible to discuss the Baltimore & Ohio report intelligently until we have the report of the General Manager of the road. On the face of it, the sum carried to profit and loss represents net earnings of about six per cent. on the capital stock of the company. More than half of this, however, is required for sinking funds and other temporary fixed charges, and the rest is almost exactly covered by diminution in maintenance of equipment. We are told that this arises "in part" from new classification of expenses, so that the increased charges for transportation and diminished charges for maintenance represent an apparent rather than real change. Unfortunately no details are given in the report before us.

The Canadian customs officers at Victoria, B.C., received last week an order restricting the movement of Canadian bonded freight in American vessels. It appears that a date was fixed after which no American vessels with freight shipped from Canada through the United States to Victoria were to be permitted to land their cargoes; but after one or two boat loads had been detained at Tacoma the order was suspended, the Victoria Board of Trade having made a vigorous protest, in which it was claimed that whatever justice or injustice there might be in permitting American vessels to handle Canadian traffic, there were not at present sufficient Canadian vessels in those waters to handle the freight.

The Shenandoah Limited is the name of a through train now running between New York and New Orleans, via the Pennsylvania to Harrisburg, and thence over the Cumberland Valley, Shenandoah Valley, the Norfolk & Western, the East Tennessee, Virginia & Georgia, and the Louisville & Nashville. The time through is said to be 45 hours, which is somewhat shorter, proportionally, than that of the Montezuma special, which made a few trips between Washington and New Orleans last spring in 41 hours.

TRADE CATALOGUES.

Architectural Sketches, by Bradford L. Gilbert, 50 Broadway, New York City.

This well-known architect, who makes a specialty of railroad structures, has issued a handsome little handbook filled with perspective views of interiors and exteriors of buildings designed by him. The illustrations are on fine paper, and are very effective. The first dozen pictures show railroad buildings, including stations, large and small, office buildings, train sheds, ferry houses and freight houses. The illustrations are interspersed with numerous pertinent suggestions about economical methods in letting contracts and erecting buildings. Mr. Gilbert gives references from a number of prominent railroad companies, as well as numerous well-known railroad officers.

Safety Appliances of the Parsons Block, Switch & Frog Co., 29 Broadway, New York City.

This company has issued a handsome pamphlet, setting forth the merits of its three specialties: the automatic mechanical block system, the continuous rail frog and a device for setting switches by means of an apparatus placed upon locomotives, which can be brought into operation before a train reaches a switch, thus enabling each train to set its own switches without the aid of switchmen. The book contains diagrams showing the construction and application of the principal parts of the apparatus. The power for operating the signals is obtained by means of a lever placed alongside of a rail, which is depressed by the weight of the wheels of the locomotive or of a special wheel made to run outside the track. An arrangement is included, by which a train not only sets a visual signal at danger behind it, but also will give an audible warning in the cab of the engine of the following train, or apply the brakes. The connection from one end to the other of a block section is by wire cable.

The Newark Machine Tool Works, of East Newark, N. J., have issued a catalogue of their new horizontal drilling and boring machines. It describes the work for which such machines are intended, and compares the product of the machines, illustrated with that of other and different types of machine tools when put upon the same class of work. A new facing attachment, illustrated and described, is a feature of the pamphlet.

Train Accidents in October.

Continued from page 803.

14th, on Southern Pacific, at Orange, Tex., engine of freight train derailed by a misplaced switch.

15th, on Chicago & Alton, at Alton, Ill., locomotive derailed by misplaced switch.

16th, on Memphis & Charleston, at Buntyn, Tenn., a freight train ran over a misplaced switch and was wrecked.

18th, on Oregon & California, at Junction, Or., passenger train derailed by a switch which had not been properly fastened. Several coaches were thrown over against a flat car loaded with iron and badly damaged. Fireman injured.

19th, on Burlington & Missouri River, near Lime City Neb., passenger train derailed by a misplaced switch. One trainman injured.

20th, on Perkiomen Railroad, near Emaus Junction, Pa., freight train derailed by a misplaced switch. It is said that the engineer had been on duty 24 hours; that he was asleep and ran past a danger signal.

26th, on Boston & Maine, at Haverhill, Mass., passenger train derailed by a misplaced switch.

26th, on Central of Georgia, near Union Springs, Ala., engine and tender of a circus train broke through a trestle which was undergoing repairs, going down about 12 feet. Engineer injured. The flag of the bridge men was not sent back far enough to give proper warning.

UNFORESEEN OBSTRUCTIONS.

3d, on Louisville & Nashville, near Gum Sulphur, Ky., passenger train ran over a cow, ditching engine, baggage, and mail cars.

7th, on Oregon & California, near Halsey, Ore., a passenger train ran over some cattle, ditching engine and several cars. Fireman killed and engineer injured.

12th, on Philadelphia, Wilmington & Baltimore, near North East, Md., a northbound passenger train running at high speed was derailed by a car door which had fallen from a car of a southbound freight train and lodged upon the opposite track, derailing the entire train. The engine was thrown over on its side clear of the track and badly wrecked; the following smoking car and a Pullman sleeper were stripped of their trucks and hurled over on the southbound track several lengths ahead of the engine. The three remaining cars stayed on the roadbed, but were more or less damaged. Three trainmen and 12 passengers injured.

13th, on Denver & Rio Grande Western, near Farmington, Col., several cars of a passenger train were blown from the track in a gale and dragged some distance on their sides. Seven passengers injured.

13th, on Union Pacific, near Iliff, Col., a passenger train ran over some cattle, derailing the forward portion of the train. Engineer, fireman and four passengers injured.

17th, on Texas & Pacific, at Madden, Tex., freight train ran into a washout, ditching the engine and several cars. Engineer and fireman killed.

20th, on Cleveland, Cincinnati, Chicago & St. Louis, near Greensburg, Ind., a freight train ran over a cow, derailing three cars.

20th, on Northern Pacific, near Hunter's, Or., a passenger train ran over a cow and was derailed and ditched. Engineer and fireman killed.

20th, on New York, Lake Erie & Western, at Goshen, N. Y., engine of westbound limited express derailed on a curve while running at moderate speed. The engine ran about 300 ft. on the sleepers and narrowly escaped falling off a bank wall. It is believed that a bolt head, placed upon the track by mischievous persons, was the cause of the derailment.

24th, on Wabash, at Keller's Station, Ind., an eastbound passenger train was derailed by a switch which had been purposely misplaced, wrecking the engine,

baggage and express cars, and the smoking car, the baggage car going over an embankment. Three trainmen and a man riding on the engine injured.

24th, on New York, Lake Erie & Western, near Goshen, N. Y., a freight train ran over some cows and several cars were derailed and wrecked.

26th, on Chicago, Rock Island & Pacific, near Paxico, Kan., a freight train ran over cow, derailing 13 cars.

27th, on Chicago, Rock Island & Pacific, near Topeka, Kan., a freight train ran over some cattle which had got caught on a trestle, ditching the engine and two cars.

27th, on Norfolk & Western, near Zuni, Va., freight train derailed at a washout, wrecking 10 cars. Two trainmen injured.

28th, on Lake Erie & Western, at Kokomo, Ind., freight train derailed by a switch which had been maliciously tampered with, wrecking the forward portion of the train, including a number of oil-tank cars. The oil caught fire and the wreck was consumed. Engineer, fireman and brakeman were burned to death.

31st, on Grand Rapids & Indiana, near Manton, Mich., passenger train derailed at a point where a guard rail had been maliciously forced out of position.

UNEXPLAINED.

1st, on Richmond & Danville, near Charlotte, N. C., nine cars of a freight train were derailed and wrecked.

3d, on St. Louis, Keokuk & Northwestern, at Moody, Mo., freight train derailed. The engine was overturned in the ditch, injuring the engineer.

5th, on Rome & Decatur, near Rome, Ga., engine and a number of cars in a freight train derailed. Two trainmen killed, one injured.

8th, on Louisville & Nashville, at Birmingham, Ala., engine of passenger train derailed.

9th, on Northern Central, at Baltimore, Md., two cars of freight train derailed.

14th, on Denver & Rio Grande, near Divide, Col., passenger train derailed and ditched. Engineer killed, fireman and several passengers injured.

17th, on Boston & Maine, at Hampstead, N. H., freight train derailed and three cars wrecked.

19th, on Baltimore & Ohio, near Confluence, Pa., a construction train running backwards was derailed, wrecking several cars. Three laborers killed, two injured.

19th, on Pittsburgh, Cincinnati & St. Louis, near Pittsburg, Pa., freight train derailed and several cars wrecked.

20th, on New York, Lake Erie & Western, at Newburg, N. Y., engine of passenger train derailed.

21st, on Louisville & Nashville, in Birmingham, Ala., freight train derailed.

22d, on Alabama Great Southern, at Birmingham, Ala., car of freight train derailed.

22d, on Chicago & Grand Trunk, at Haskell's, Ind., engine of freight train derailed and wrecked, killing the engineer and injuring the fireman.

22d, on Louisville & Nashville, near Bangor, Ala., freight train derailed. Three trainmen injured and a man in charge of horses killed.

23d, on Philadelphia & Reading, at Reading, Pa., a switch engine broke through a 12-ft. trestle and was badly damaged. Engineer and fireman injured.

23d, on Chicago & Northwestern, at Carroll, Ia., engine and 13 cars of freight train derailed and wrecked.

24th, on Louisville & Nashville, near Decatur, Ala., freight train derailed at a crossing, wrecking eight cars.

28th, on Fall Brook Coal Co.'s road, at Elkland, Pa., engine of switching freight derailed and overturned.

28th, on Northern Central, at Elmira, N. Y., engine of freight train derailed at a crossover track.

30th, on Boston & Maine, at Oakdale, Mass., two cars of a freight train derailed.

30th, on New York, Lake Erie & Western, at Campville, N. Y., a car of an eastbound freight was derailed, piling up 15 cars in a very bad wreck. Two trainmen and a man riding in caboose injured.

31st, on New York, Lake Erie & Western, at Cameron, N. Y., freight train derailed. A freight on an adjoining main track ran into the wreck before it could be stopped. One trainman injured.

31st, on Baltimore & Ohio, at Chicago Junction, O., engine and several cars of freight train derailed and wrecked.

OTHER ACCIDENTS.

6th, on Union Pacific, near Weber, Utah, a baggage car of an eastbound passenger train containing theatrical scenery was found to be on fire, and was destroyed. It is supposed that a spark from the engine entered the car either under the front door or through a ventilator.

15th, on Philadelphia & Reading, in Philadelphia, Pa., a locomotive ran into a cable street car at a crossing, and was disabled.

21st, on New York Central & Hudson River, at Fishkill, N. Y., the headlight of an engine was blown off in a gale and carried into the Hudson River.

22d, on Chicago & Grand Trunk, at Wellsboro, Ind., boiler of engine of freight train exploded, wrecking it completely. Engineer and fireman killed.

23d, on Louisville & Nashville, at Faxon, Tenn., boiler of locomotive exploded, killing the fireman.

23d, on Southern Pacific, near Turlock, Cal., axle under rear car of special passenger train broke.

28th, on Pennsylvania, near Delano, Pa., as a passenger train was running at speed near Rancocas Creek, the iron overhead bridge for supporting signals fell and crashed through the roof of a baggage car.

31st, on Louisville & Nashville, near Warrior, Ala., a car in a freight loaded with fire brick broke down.

A summary will be found in another column.

TECHNICAL.

Locomotive Building.

The Michigan Central has received the last five engines of an order recently placed with the Schenectady Locomotive Works. This includes the new compound locomotive.

The East & West of Alabama has recently received several eight-wheeled and 10-wheeled locomotives and some switching engines from the Baldwin Locomotive Works.

The Strong locomotive "A. G. Darwin" is now being tried on the Cleveland, Cincinnati, Chicago & St. Louis.

Car Notes.

The Ohio Falls Car Co., of Jeffersonville, Ind., has just delivered two chair cars to the Kansas City, Wyandotte & Northwestern, which are equipped with buffet and smoking room, as well as lavatories.

The Laclede Car Co., of St. Louis, has received an order for 40 new cable cars for the Metropolitan Cable line, of Kansas City, and for nine grip cars for the Kansas City Cable Co.

The St. Charles Car Co. has just completed four baggage and four passenger cars for the Denver & Rio Grande. The passenger cars are equipped with the Johnson car seat and with the Pintsch gas lamps.

Articles of incorporation of the Riordan Refrigerator Car & Transportation Co. have been filed in Illinois. The company will manufacture and operate a line of refrigerator cars. The principal office will be at Chicago. The capital stock is $2,000,000. The incorporators are: Winthrop Pond, Charles B. Kaufman, and George B. Kattel, of New York City; Morris R. Locke, of El Paso, Tex., and James L. Pennifield, of Chicago.

Bridge Notes.

The contract for building an iron bridge with tubular pier spans across the Blue River, at Westmoreland, Kan., has been awarded to the Wrought Iron Bridge Co., of Canton, O., at $5,935.

The County Commissioners will receive proposals for constructing a wrought-iron Pratt truss bridge of two spans, each 48 ft., at Cumberland, Md.

The pontoon bridge, Leavenworth, Kan., which was recently constructed across the Missouri River at that point, was washed away last week. The parts were recovered, and will again be placed in their former position. The bridge cost $40,000.

The Lake Erie & Western is constructing a new iron bridge at Fremont, O.

The St. Louis Merchants' Bridge and Terminal Co. has increasedits capital stock to $2,000,000. The increase is required to meet the necessities of the extensive system of terminals which the company has planned.

The superstructure for the iron bridge of the Dravosburg, Reynoldton & McKeesport road at McKeesport, Pa., has arrived, and is now being put in place.

The Pennsylvania is erecting a new iron bridge at Cokeville, Pa.

The Paducah & Illinois Bridge Co. has been chartered in Illinois, with office at Brooklyn, to construct a steel bridge across the Ohio River at Brooklyn for railroad purposes. The capital stock is $100,000. The incorporators are Charles Reed, Samuel Houston, W. F. Paxton and others.

The Shiffler Bridge Works, of Pittsburgh, have in course of construction two new iron buildings with corrugated iron roofs. The smaller one is 30 × 100 ft. and is for heavy punch presses. The other building is 60 × 120 ft. and has two heavy cranes of 20 tons capacity each.

An iron bridge has just been finished at Luzerne, N. Y., to replace a wooden one.

The Commissioners' Court of Val Verde County, Tex., will receive proposals until Dec. 16 for the erection of an iron bridge 100 ft. long and also a bridge 24 ft. long and 20 ft. wide.

The Hopkins Bridge Co. is erecting an iron swing bridge over the Buffalo bayou, east of Houston, Tex., on the extension of the San Antonio & Aransas Pass road.

The Atlanta Bridge Co., of Atlanta, Ga., has just completed an iron bridge over the Chattahoochee River, on the Alabama Midland, near Bainbridge, Ga.

The bridge of the Baltimore & Delaware Bay road, at Bombay Hook, Md., was damaged by the recent storms and a new iron bridge is to be built to replace it.

The East Macon Improvement Co. is being organized to build an iron bridge across the Ocmulgee River at Second street, Macon, Ga., at an estimated cost of $40,000.

The board of engineers appointed by the Secretary of War to consider and report upon two bills presented to the last Congress providing for bridges across the Mississippi River, one above and one below New Orleans, met in that city last week and heard arguments for both companies. The main question was as to the obstruction of navigation.

The contract for building the iron bridge across the Reedy River at Main street, Greenville, S. C., has been awarded to the Southern Bridge Co., of Birmingham, Ala., at $7,475.

The St. Cloud Bridge Co. has signed the contract with the City Council to build the Tenth street iron bridge at St. Cloud, Minn., for $81,876. The bridge will have stone abutments and four spans of 201½ ft. The roadway is to be 19 ft. above the water.

The iron plate girder bridge above Gordon Falls, Pollet River, N. B., was finished last week. The bridge has a span of 104 ft. The bridge at Pokiok is progressing rapidly and the piers are now about done.

On the St. Martins & Upham road in New Brunswick seven bridges are being built to be completed by Feb. 15. Appleby & Collins, who have already completed three bridges on the line, are erecting three of the seven and the remaining four are being done by the company. The most important is the Minnette bridge, near Henry Lake, which is 80 ft. high and will cost $12,000. The bridges are being constructed under the supervision of E. Briggs, the company's bridge builder, who also constructed the bridges on the Central road.

The Selectmen of Newburg Center, Vt., have decided to build an iron bridge across the Wells River at Bottomville.

The County Commissioners have reported that the iron bridge over the Conowingo River, near Lancaster, Pa., is so badly wrecked by the recent flood that a new bridge must be erected.

The Shore Line Railway Bridge Co. is being organized to construct a railroad bridge across the St. Croix River, at the town of St. Stephen, N. B.

A company is to be chartered in Canada to construct a railroad and carriage bridge across the Ottawa River from a point in the City of Ottawa, near Metcalfe Square, to Hull. The estimated cost is $500,000.

Manufacturing and Business.

Between July 1 and Nov. 1 the American Brake Co. fitted up 500 locomotives with its steam and air locomotive brakes.

The McConway & Torley Co., of Pittsburgh, has in course of construction a brick building 115 × 210 ft., to be used as machine shop, blacksmith shop and warehouse for the manufacture of the Janney coupler.

The Long & Allstatter Co., Hamilton, O., is adding a story to its main building, which will make it four stories high. It is 60 × 200 ft.

The Dunham Mfg. Co., of Boston, reports sales of 30,000 Davies spikes to the New York Central & Hudson River road, and of 10,000 to the Pennsylvania. The latter are to be put down on the horse-shoe curve near Altoona.

The Central Railway Supply & Construction Co. has been incorporated in Indiana to manufacture and deal in railroad supplies and equipments. The capital stock is $50,000. The directors are John E. McGettigan, Frank S. Foster, Lewis P. Horton and others.

Articles of incorporation were filed in New Jersey last week by the Loughridge Brake & Car Co. to construct hand or compressed air brakes for cars or engines. The capital stock paid in is $3,000. The incorporators are John B. Fell and Sydney L. Wright, of Philadelphia; Samuel H. Gray, of Camden, N. J., and others.

The Johnston Electric Train Signal Co., of Boston, has removed its office from the Equitable Building to Rooms 48 and 49 in the Hatheway Building, 620 Atlantic avenue, in the centre of the electrical interests of Boston.

The Samson Cordage Works, of Boston, have recently sent to railroad offices sample cards of very neat solid braided cords, showing plain and mixed colors as used in railroad service. The company claims that the wearing qualities of these braided cords are greatly superior to those generally used. They certainly have a much neater appearance.

The Southern Railway Construction Co. has been organized at Louisville, with a capital stock of $500,000, by William Ayres, James G. Givens and Harry Stucky to build and equip railroads in Kentucky. The company's office will be in Louisville.

J. D. Powers, J. C. Fawcett and Stephen Powers have organized the Kentucky & Indiana Contract Co, with principal office at Louisville, Ky., to buy and sell real estate and to build railroads, furnaces, etc.

The Ashton Valve Co. has issued a notice from its Chicago office, 218 Lake street, that hereafter it will fill orders for "nickel-seated" pop safety valves, but for the present will not carry such valves in stock, and therefore urge customers desiring such valves to place their orders early to avoid delay. The prices for the "nickel-seated" valve are the same as those for the standard Ashton valve.

The Thomson-Houston Motor Co., of Boston, is paying much attention to tramway work, and is equipping several roads in the East with electric motors. The tram cars are used in mills particularly in transporting material from one part of the establishment to another, doing away with horse power or man power in such work. The company has equipped one of the mines of the Hillside Coal & Iron Co., of Jermyn, Penn., with electric power. The locomotive is a regular 40 horse-power machine, and it has been in continual operation for the past month and has given great satisfaction, thus showing that electricity can be applied with equal success either under ground or above. The overhead construction in mines is practically the same as that used in the street railroad work, the only difference being the use of a specially-prepared mine insulator. The locomotive in the Hillside mine has displaced nine mules and greatly increased the output.

Iron and Steel.

The Hecla Iron Works, which occupied an entire block in the Eastern District of Brooklyn, N. Y., was totally destroyed by fire last week. The estimated loss is nearly covered by insurance. It is not known how the fire started. The burned building was five stories high, and had a frontage of 150 ft. on North Tenth street. It was almost entirely destroyed, including a part of the one-story foundry building.

The Cambridge Iron & Steel Co. has commenced building a plant at Cambridge, O., to cost about $100,000. The product will be iron and steel sheets. A. Beyer is President, W. C. Browne, Treasurer, and A. Beard, Manager.

The following, among other awards of contracts for furnishing material to be used in the construction of the machinery of the cruisers Nos. 7 and 8 at New York, have been made by the Navy Department: Bethlehem Iron Co., Bethlehem, Pa., finished steel shafts, 35 cents a lb. (about $70,000); Midvale Steel Co., Philadelphia, piston rods, connecting rods, etc., $965,577; Oliver Iron & Steel Co., Pittsburgh, rivets, $5,040.

Jas. P. Witherow, Pittsburgh, Pa., has received the contract to build the two furnaces previously reported as to be built by the Middlesborough Steel, Iron & Coal Co., at Middlesborough, Ky.

The Seattle Rolling Mill Co. has been incorporated, to erect and operate a rolling mill at Seattle, Wash The company has a capital stock of $100,000. The incorporators are James Cartwright, William Hainsworth S. L. Crawford, C. T. Conover, W. C. Hill and others.

The Secretary of the Navy has awarded to the Midvale Steel Co., of Philadelphia, the contract for supplying steel for use in the construction of the two 3,000-ton cruisers to be built by the government at New York and Norfolk. The price is $65,000. The contract for furnishing boiler tubes for the machinery has been awarded to William A. Wheeler, of New York, for $15,489.

Long & Co.'s proprietors of the Vulcan Forge & Iron Works, in Pittsburgh, failed last week. The failure was precipitated by the suspension of the Lawrence Bank. The plant consists of a rolling mill, forge department and machine shop. In the mill department are 20 puddling furnaces, and one scrap and three heating furnaces, and there are four hammers in the forge department. An arrangement will probably be made so that the plant will continue in operation.

The Rail Market.

Steel Rails.—The most interesting of recent sales is that of 5,000 tons to a Mexican road by a Western mill against foreign competition. No sales have been made in the East upon which a quotation can be based, but many of the mills are adhering to $35. One mill has quoted an equivalent to $34 at mill, but no sale was made. On the quotations made in the Eastern mills, Chicago mills ask $37@$37.50, but no business has been done. Pittsburgh quotes $35 at mill.

Old Rails.—The market—No sales have been reported at New York or Pittsburgh, but the market is expected to improve soon. Quotations at New York are $24.50@$25, and at Pittsburgh nominally $27@$27.25 for iron rails, and steel rails have been sold at $23. At Chicago the quotations are $26.25@$26.50 for old iron rails, and $20@21 for old steel rails.

Track Fastenings.—Prices are nominally $2.20@$2.30 for spikes, and $2.10@$2.20 for angles.

Car Heating.

The Fitchburg road is fitting its entire passenger equipment with the Sewall steam-heating system, now controlled by the Consolidated Car Heating Co., of Albany, N. Y.

Progress of Interlocking.

The Union Switch & Signal Co., Swissvale, Pa., shipped during the month of October interlocking frames aggregating 345 working levers, and 46 spare, making a total of 391 levers, which is greatly in excess of the output for any previous month in the history of the company.

The Effect of Electricity on Ships' Compasses.

The employment of iron and steel for the construction of ships produced perturbations in the compasses which were overcome, as is well known, by a system of compensation. Modern steamers are generally lighted by electricity, and it is found that the wires frequently affect the compass seriously. Some precautions formulated by Mr. W. Thomson will be found useful:

1. Double circuits should be employed in running the wires, unless the alternate spstem is used.

2. To test the insulation of the wires connection should be made with the hull and an incandescent lamp attached, which will only glow in case of defective insulation.

3. An observation should be made to determine whether there is any movement of the compass on stopping and starting the dynamo.

4. The compass should not be illuminated by an incandescent light, unless its effect upon the needle is unnoticeable.

Unloading the Equipment Account.

The Philadelphia & Reading is destroying large numbers of its very short four-wheeled coal cars, the policy of the road, it is stated, being to build no more of this old class, on account of the additional care necessary in handling them in the very long trains now hauled. The woodwork is burned up, and 25 cars a day have thus been disposed of at the Reading shops. On one day 200 were contributed to one bonfire. There must have been a sizable residuum of scrap iron.

"Staffordshire Best."

After remarking that much of the "Staffordshire iron" is made from heterogeneous materials, as 646,000 tons of puddled iron and only 340,000 tons of pig were produced last year in the Black Country, the *Iron and Steel Trades Journal* says: "It is stated, and not without good grounds, that specifications for 'best Staffordshire iron' are frequently placed with makers of the very worst iron made in the kingdom, and when the iron fails the Black Country too frequently gets the credit (*!*) of it."

And the *Journal* cites the example of the Centennial Hall at Sydney, where the whole of the iron used in plates, etc., were to be of the best Staffordshire iron for girders, etc., "to be approved by the architect or clerk of the works, who will have the power to test any portion of the work to ascertain that it will stand the test of the quality stated." The iron furnished was rejected, and on the question of damages being submitted to two experts they decided that the iron to be used in the construction of the web girders should stand the following tests: For longitudinal tension 49,280 lbs., contraction, 15 per cent.; transverse 30,320 lbs., contraction, 5 per cent.; bar and angle iron, tension 51,680, contraction, 18 per cent. Bending, around a one in. bar, ½-in. plates with grain 35 degrees; across grain 15 degrees; ⅝-in. plates with grain 60 degrees, across grain 25 degrees. This particular iron proved to have been made in the Cleveland district.

On the other hand, "the Victorian engineers regularly specify iron plates and bars to have a tensile strength of 26 and 27 tons, respectively, without being aware that no genuine puddled iron ever gives such strains, while if it did it would be material of a useless description. The enterprising middleman—the Melbourne iron merchant—furnishes plates that show tensile strains over 26 tons per square inch, and bars that show more than 27 tons per square inch, but they are not iron plates or iron bars at all, in the sense of puddled iron, but cheap plates or bars of ingot iron or mild steel."

Iron Ore Charters.

An article on the iron ore trade of the lakes for next year in the *Iron Trade Review* estimates that 2,700,000 tons of ore will be shipped from the head of the lake, Two Harbors and Ashland, and of this amount 1,400,000 tons have been covered by season charters at $1.35. Charters for about 250,000 are reported for Escanaba at $1.05 The bulk of the sales so far reported have been made to Chicago parties, and a negotiation is in progress for more than half a million tons to Pittsburgh parties. Everything points to a large increase in production over this year's gains, 9,000,000 tons being predicted as the probable output.

Brooks Locomotives.

The Brooks Locomotive Works of Dunkirk have recently delivered to the New York Central & Hudson River ten 19 × 26 mogul locomotives designed for fast express freight service. They have wagon-top boilers 58 in. diameter at front ring, extension front and taper stack; fire box 42⅝ in. wide, 102 in. long, placed on top of frames. There are 270 2-in. tubes of No. 11 W. G., steel tired truck wheels, 5 ft. 4 in. drivers, balanced valves, Westinghouse automatic and driver brakes. The tanks hold 3,000 gallons, and the engines weigh, in working order, exclusive of tenders, about 130,000 lbs.

These works are delivering to the Cleveland, Cincinnati, Chicago & St. Louis ten 19 × 24 ten-wheel and five 18 × 24 six-wheel switching locomotives. The ten-wheel engines are designed for heavy passenger service. They have large boilers and fire boxes, 62-in. drivers, 3,600-gallon tanks, and combine all modern improvements. They weigh, in working order, about 128,000 lbs., exclusive of tender. Among other locomotives recently shipped by these works were two 17 × 24 passenger to the Eutawville Railroad of South Carolina, one to the Winona & Southwestern, one to the St. Catharines & Niagara Central of Canada, four ten-wheel passenger to the Chesapeake & Ohio, ten-wheel and mogul freight engines to the Lake Erie & Western, Toledo & Ohio Central, Dayton, Fort Wayne & Chicago, Quincy Copper Mining Co., and three freight and one passenger engine for export to Cuba. The works are very busy and working overtime.

Magnolia Metal on the "Owego."

The following note concerning the use of magnolia metal on the fine steamer "Owego," of the Union Steamboat Co.'s line, is from a letter written Nov. 18 by the Chief Engineer, Mr. R. L. Peck:

The "Owego" is 2,500 tons burden, has triple expansion engines, 3,000 horse-power; high pressure, 28 in. diameter; intermediate, 42⅛ in. diameter; low pressure, 72 in. diameter, and has 4½-ft. stroke pistons; main shaft, 14 in. diameter.

The magnolia metal was used in low-pressure crank-pin brasses, 14 in. diameter, 16 in. long. The metal was placed at quite a disadvantage. That used before had melted out the first trip used in this bearing, and it was well cut up on the surface. The magnolia was put in in a great hurry, and I did not have time to run it as I should like to have done. The first trip to Buffalo City, Aug. 1, I intentionally let the bearings run loose, and there was a great deal of pounding upon the metal. I took this precaution because the other had melted. I expected to see the magnolia metal all used up upon examination in Buffalo, but was surprised and gratified by its condition. I keyed the brasses up, and the chill has not since been off them, although we have encountered weather that would lift the propeller wheel out of the water. These facts are taken from my log record.

Electric Motors in Germany.

The locomotive builders in Germany realize how closely the electric tramway motor approaches the steam motor, and one of the largest shops in that country devotes considerable attention to the production of electric motors of all sizes, and finds much profit in this work at all times, and particularly so when the demand for locomotives is small. During the development of tramway motors incidental uses have been found for the electric motor, which furnish a field for the employment of shop tools upon the details to accompany the motors.

Street Railroads.

The Spokane Falls Cable Co. has purchased the Spokane Falls Street Railroad and will soon put in cable power on the lines formerly operated by that company.

The Tacoma Southern Street Railroad Co. has been incorporated at Tacoma, Washington. The capital stock is $100,000. The incorporators are R. F. Radebaugh, Theodore Hosmer and Frank O. Meeker.

The Seattle Commercial Street Motor Railroad Co. has nearly completed the piling across the tide flats at Seattle. The work is being done by Jones & Son. The motor (steam) will run from Commercial street around the Seattle Harbor to West Seattle. J. M. Thompson is the leading spirit in the enterprise.

The Seattle Madison Street Cable Co. has work progressing on its line. A single trench has been dug nearly to the power house in Renton; addition and rails have been laid for five blocks. This road will be three miles long, double track.

The Tacoma Central Street Electric Railroad Co. is grading in Tacoma for its new motor line.

The Kansas City Cable Co. is extending its Ninth street line east for about a mile. The line will be in operation by Dec. 1.

Electrical Notes.

The New York & Harlem Railroad has resumed the running of its electric cars on its street line in New York City with new batteries made after a process devised to meet the restrictions laid down by Judge Lacombe in his recent decision in the suit against the Julien Company for infringement. These batteries are said to be even more efficient than the old ones, perhaps owing to greater care being taken in their manufacture. The cars will be put in service gradually, as new batteries are received from the manufacturing company.

Since Sept. 1 telephone service in France has been under government control. A reduction in the subscription price from 600 to 350 francs per annum is to be effected, and arrangements are to be made for telephonic connection between Paris and London, and Paris and Rome.

The city of Rome, Italy, proposes to increase its facilities for electric lighting by using the water power at Tivoli for the driving of dynamos. About 2,000 horse power are available, of which 1,700 will probably be used, and the electric current will be transmitted through a 48-mile cable. The lighting station already established at Rome embraces 2,700 horse power, so that with the proposed addition there will be altogether 4,400 horse power. The alternating current will be used.

The extension of the Metropolitan Electric road from Armourdale to Argentine, at Kansas City, 2½ miles will be completed in a few weeks.

THE SCRAP HEAP.

Notes.

The officers of the law in Texas have arrested nine men and two women for complicity in the train robbery at Berwyn, I. T., Nov. 25. The amount of money taken from the train at Pryor Creek, Nov. 24, was only $1,200.

The Kansas City Grand Union Depot, Bridge Railway and Railway Terminal Co., has filed a charter in Kansas. The directors are Henry McGrew, William P. Van Aken, Nicholas McAlpine, Kansas City, Kan.; William H. Reed and Robert M. Ray, of Kansas City, Mo. The capital stock is $12,000,000.

Preliminary surveys are being made at Montreal, at the extreme eastern part of the city, by surveyors of the Canadian Pacific and the corporation for the erection of a large inland dock. It will cost about $4,000,000, and will be independent of the harbor improvements now in process of construction. No official sanction has, however, been given to the scheme, and any operations are yet merely preliminary.

The St. Louis, Arkansas & Texas had considerable trouble from drunken rioters on trains in Pulaski and Lonoke counties, in Arkansas, during several days of last week. The accounts indicate that a mob of negroes had been riding on the trains several days, trying to create a disturbance, and finally refused to buy tickets on one trip and attempted to intimidate the crew. Sheriffs were put aboard and firearms were secured. A negro who attempted to set a brake was interfered with by a brakeman and a general fight ensued, during which one man was shot dead. The General Manager of the road appealed to the Governor of the state for protection. On the day following the shooting about 400 negroes met the train at one point and demanded the surrender of the brakeman who killed the rioter, threatening to injure the bridges or track if refused.

An English "Fad."

The English "fad" of building locomotives with double sets of cylinders, one for high and the other for low pressure steam.—*Railway Age.*

A Railroad Colossus.

The mileage of the St. Paul system now aggregates 506,905 miles. By a proposed acquisition of the new Sioux City [*sic*] Short Line it will be a railroad colossus. —*New York Tribune.*

The Stockholm Cable.

The great telephonic cable between Stockholm and Gothenburg has at last been completed, having been some nine months in construction, so that the whole of the south and central part of Sweden and a considerable portion of the north are thus connected. The crown will maintain stations in all towns touched by this telephonic artery.

A Western Romance.

A Cincinnati paper is responsible for the yarn that on a chilly fall morning not long ago seven women and eleven men were landed from a Pullman palace car in the streets of Cincinnati without any shoes on. The porter of their car had gathered up the shoes and carried them forward in order that he might enjoy the society of another porter while cleaning them. Before he returned to his own car it was switched off, and hence those tears.

Triumph of the Rotary.

A recent dispatch in a California paper from Truckee, Cal., is copied below. On first reading it, the words "proved a success until—" may cast a shadow across the spirits of admirers of the Rotary, but the context is reassuring and justifies our heading: "To-day has reminded us of the old-time Sierra storms. It has been drifting hard, and a regular mountain blizzard has been raging. Snowplows have been brought into action, and the new Rotary plow has made its trial trip. It proved to be a success until it arrived at Tunnel No. 2, where it met an old-style plow coming in the opposite direction. The result was a collision, but, still undaunted, the Rotary, for lack of snow, chewed up the end of the other plow."

New Iron Buildings.

The Grand Rapids & Indiana is building at its passenger station in Grand Rapids, Mich., a train shed 600 × 135 ft.

The Berlin Iron Bridge Co., of East Berlin, Conn., has received the contract for a new building for the Chesapeake Dry Dock and Construction Co. at Newport News, Va., which will be made entirely of iron. The building will comprise a machine shop 100 × 300 ft., a boiler shop 100 × 300 ft., a bending shed 60 × 128 ft., and a ship shed 60 × 320 ft. The contract price is about $150,000.

President Harrison on Safety Appliances.

The President's first annual message to Congress refers to the petition presented by brakemen to the Interstate Commerce Commission and to the Conference of State Railroad Commissioners held in Washington last March, and adds: "It is competent, I think, for Congress to require uniformity in the construction of cars used in interstate commerce, and the use of improved safety appliances upon such trains. Time will be necessary to make the needed changes, but an earnest and intelligent beginning should be made at once. It is a reproach to our civilization that any class of American workmen should, in the pursuit of a necessary and useful vocation, be subjected to a peril of life and limb as great as that of a soldier in time of war."

RAILROAD LAW—NOTES OF DECISIONS.

Powers, Liabilities and Regulations of Railroads.

In Iowa a mortgage on the rolling stock of a certain division of a railroad contained a covenant to designate in a certain mode as belonging to that division such a proportion of the whole rolling stock owned by the mortgagor as that division bore to the entire road. The United States Court holds that as against subsequent mortgagees of the entire system, the first mortgage covered only such rolling stock as was thereafter designated as belonging to the division named, though the amount covenanted for was not so designated. Where rolling stock has been purchased and designated for the division named, the lien of the first mortgage attaches and is not lost by subsequent obliteration of the designations, where such rolling stock is otherwise traceable, as against the mortgagor, or purchasers at a sale under a subsequent mortgage of the entire road and appurtenant rolling stock, who take with notice of the former mortgage and the lien created thereby.[1]

A Statute of Texas provides that if any railroad corporation organized under the law shall not, within two years after filing and recording its articles of Association, begin the construction of its road, and construct and equip, etc., at least 10 miles of its proposed road, such corporation shall "forfeit its corporate existence, and its powers shall cease as far as it relates" to the unfinished part of the road, "and shall be incapable of resumption by any subsequent act of incorporation." The Supreme Court holds that the failure to begin the construction within the two years works a forfeiture of corporate existence without any judicial proceedings for that purpose, and it likewise releases a subscriber to stock of the company from liability on his subscription.[2]

The Supreme Court of Illinois holds that under the Constitution providing that "all railroad companies shall permit connections to be made with their track, so that any such consignee [of grain] and any public warehouse, coal bank or coal yard, may be reached by the cars on said railroad," the duty of a railroad company to permit a switch and side track leading to a coal mine, constructed in a proper manner by the owners of the mine, to remain connected with its main track, is absolute, and *mandamus* will lie to compel it to do so.[3]

In Missouri the Supreme Court holds that a tax levied to pay the bonds of the county, given by it for stock in a railroad company, is a county tax, and this though the bonds can only be paid out of the tax levied for that special purpose.[4]

Carriage of Goods and Injuries to Property.

The Supreme Court of Arkansas rules that a railroad is liable as a common carrier while running its trains over the line of another company.[5]

In Texas it is held by the Supreme Court that the interference of strikers is a good defense to a suit for delay in the delivery of goods.[6]

In Arkansas the Supreme Court holds that where a bill of lading excepts losses by fire and the goods are burned while in the car, but after they have been formally delivered to the consignee, the carrier is not liable unless negligence is shown.[7]

In Texas a contract for carriage of cattle provided, as a condition precedent to the right to recover damages, that written notice should be given to some officer of the carrier, or the nearest station agent, of any loss or injury to the cattle, before they were removed from the place of delivery, or mingled with other stock. The cattle were shipped Dec. 13, and were bruised and injured by improper transportation so that they lost 25 per cent. in value. They reached their destination Dec. 18. In an action for damages, the Supreme Court holds that the carrier should show that it had an officer or agent near the place where the notice was to be given; that the limitation of liability in such case was unreasonable.[8]

In Colorado goods were shipped over the Union Pacific to D., with instructions to forward them to their destination over the D. & N. O., but the U. P., in willful violation of instructions, and with intent to divert traffic from the D. & N. O., delivered the goods to the D. & R.

G., a competing road, who knew of the shipping instructions, being party to a contract with the U. P. to so violate owners' directions as to shipment. The Supreme Court holds that the D. & R. G., having obtained possession of the goods wrongfully, had no carrier's lien on the same for its own charges or those advanced to former carriers.[9]

In Missouri the Court of Appeals rules that the state statute concerning railroad classification and charges, repeals the common law, and an action by a shipper to recover the excess of overcharges exacted by it must be brought under the statute, and the common-law action does not lie.[10]

Injuries to Passsengers, Employees and Strangers.

The Supreme Court of Pennsylvania rules that to attempt to alight from a moving train is contributory negligence.[11]

In Vermont a passenger was injured in a collision. He was at the time having a smoke in the baggage car, but it appeared that had he been in the passenger car he would most likely have been killed. The trial court instructed the jury that they were to determine whether he being where he had no right contributed to the injury, and if he did he could not recover. The railroad objected to this instruction, but the Supreme Court say that it is as favorable to the company as could be asked, and affirms a verdict in favor of the plaintiff.[12]

In Maryland the Court of Appeals rules that the mistake of a gatekeeper in a railroad station as to his duties under the rules of the depot is no defense to an action against a railroad company for damages for refusal of the gatekeeper to allow a passenger to pass through the gate to reach the train, where the passenger has a right to pass through the gate at the time he made the attempt. The passenger is entitled to such damages as are the immediate consequences naturally resulting from the act complained of, with exemplary damages for malice or use of unnecessary force in preventing him from passing to the train. Expenses incurred by him as a result of the refusal to admit him to the train, and mere inconvenience, if capable of being assessed at a money value, and any actual loss in business which was a direct and necessary consequence of the wrongful act, are proper elements of damage.[13]

In Arkansas the Supreme Court rules that the fact that a car left the track, causing the injury complained of, is *prima facie* evidence of negligence, which can be rebutted only by showing that the accident was unavoidable, or could not have been prevented by the utmost skill, foresight, and diligence both in respect to the condition of the appliances in use, and to the management of the train at the time.[14]

In Mississippi, in an action for an injury by the derailment of a car, several witnesses for plaintiff testified that the ties at the point where the accident occurred were very rotten, and that the rail was much worn. The only testimony to rebut this was that of defendant's section boss, who testified that he examined the track a day or two before the accident, and that the rail was sound, but admitted that one of the ties was somewhat decayed. Defendant did not produce the broken portion of the rail. The Federal Circuit Court holds plaintiff entitled to recover.[15]

The Supreme Court of Kansas rules that complaint of a defective railroad crossing, made to one who has no charge or control of the same, though he be a servant of the railroad company, is no notice of the defect to the company.[16]

In the same state the Supreme Court holds that the solicitation of employment in a certain line of work is not an assertion by the servant that he can perform the labor with defective tools. And where a sectionman is told to work with a defective tool, of which he had complained, until a good one, promised, should arrive, and relying on such promise, and there being no immediate danger, does so, and is injured by the use of the defective tool, he can recover for the injury.[17]

In New York, the plaintiff while endeavoring to uncouple a train consisting of eight loaded cars and four empty ones, which was slowly moving backward to release the pressure on the coupling pins, was thrown down, and a wheel passed over his leg. He contended that the accident was caused by defects in the engine, which prevented the engineer from stopping the train immediately upon his call. There was evidence that steam leaked through the throttle-valve; that, on one occasion, enough steam leaked through, in 10 or 15 minutes, to move the engine, with nothing attached, four or five lengths; and in four or five minutes, on another occasion, to move it 20 feet. The fireman, who was sworn for plaintiff, testified that the train did not move more than five feet after plaintiff called. The engineer and two other employés of defendant were present, but they were not called as witnesses. The Supreme Court holds that this is insufficient to justify a finding that the accident was caused by defects in the engine.[18]

In Texas the Supreme Court rules that a locomotive engineer and fireman being fellow-servants, the latter cannot recover from the master for an injury caused by the negligence of the former.[19]

In Arkansas a published rule of defendant company forbade its employés to go between cars to make a coupling "unless the draw-head and other coupling appliances are known to be in good order." The ordinary play of a coupling-link is from 6 to 7 in. Plaintiff, a yardmaster, attempted to couple two freight cars when he discovered that the draw-head of the standing car was about 2 in. lower than it should have been, and was twisted to one side, also that the link was caught fast and could not be detached. He thereupon removed the link from the moving car and endeavored to make the coupling by raising the link in the other car by the use of force. In so doing his hand was crushed. The Supreme Court holds that he was guilty of gross contributory negligence and could not recover.[20]

In Kansas a workman went to work upon a trestle on defendant's road, on a foggy morning. While stepping back to get out of the way of a train he was killed by another train on another track. The officers of the road had promised the contractor under whom he was at work that trains would be run so that men at work on the trestle could get out of the way, though this promise was not known to him. The Supreme Court holds that the question of contributory negligence was for the jury.[21]

In Minnesota a railroad switchman, while running upon the track at station grounds, was overtaken and injured by a locomotive, which was moved without the customary signal. There was room for him to have traveled outside of the track, but he would have had to wade in snow of considerable depth. The Supreme Court holds that the question of contributory negligence was for the jury.[22]

In Kansas the Supreme Court rules that where a brakeman, under the directions of the conductor of his train, and in the presence and with the knowledge of the division superintendent of the road, who has charge of its management and directs the employés of the company in the performance of their duties, opens and adjusts a switch for a long time in a different manner than prescribed by the established rules, such rules are deemed changed or modified as to such brakeman.[23]

In New York a child, while going from one of a number of houses abutting on defendant's track across the track, was struck by a passing locomotive. The occupants of the houses were in the habit of frequently crossing the track for various purposes. There was testimony that the child was standing on the track when the locomotive was about 200 ft. distant. The engineer testified that he first saw her standing near the track at about that distance from her, but that she did not get on the track until he was within 35 or 40 feet of her, when he first attempted to stop the train. The Supreme Court holds that the question of defendant's negligence was properly submitted to the jury.[24]

In Missouri a woman, 65 years old, while passing from east to west, over a railroad crossing, where there were six or seven tracks, was killed by a train detached from the engine, moving towards the north on the second track from the west. As she passed over the third track from the west, her face was turned to the west, and she continued looking in that direction until she stepped on the second track. Her attention was apparently attracted to a moving engine on one of the tracks to the north. Cars extended on the intermediate tracks up to the crossing, but after passing the third track she would have had an unobstructed view from the south, if she had looked around, and could have seen the train in time to avoid injury. She was killed just as she stepped on the sesond track, and the railroad employés could not have prevented the injury after she appeared on that track. The Supreme Court holds that she was guilty of contributory negligence sufficient to bar recovery, though defendant was also negligent in the management of the train.[25]

In New York the Court of Appeals rules that a person going on the track to save younger children from danger, knowing that the train is coming, and only half a mile away, is not a trespasser.[26]

In Illinois a man was struck by a train at a point where the railroad crossed two streets. The streets were much used by the public, and, at the time of the accident, a circus was being held within a short distance of the crossing. He approached the crossing in a top buggy, drawn by a single horse, going at a gentle trot. The evidence was conflicting as to whether his view was obstructed by cars on a side track. A flagman was usually stationed at the crossing, but there was a conflict of testimony as to whether he was there at the time in question, as also in regard to the fact of the ringing of the bell. The train was going at the rate of 20 miles an hour. The Supreme Court affirms a verdict against the railroad.[27]

1 U. S. Trust Co. v. Wabash R. Co., 39 Fed. Rep., 891.
2 Bywalen v. P. & G. N. R. Co., 11 S. W. Rep., 856.
3 C. & A. R. Co. v. Suffern, 21 N. E. Rep., 824.
4 State v. H. & St. Joe R. Co., 11 S. W. Rep., 746.
5 Eureka Springs R. Co. v. Timmons, 11 S. W. Rep., 690.
6 Int. & G. N. R. Co. v. Tisdale, 11 S. W. Rep., 900.
7 St. L. I. M. & S. R. Co. v. Bone, 11 S. W. Rep., 958.
8 Good v. G. H. & S. A. R. Co., 11 S. W. Rep., 854.
9 D. & R. G. Co. v. Hill, 21 Pac. Rep. 914.
10 Young v. K. C., St. J. & C. B. R. Co., 33 Mo. App., 509.
11 N. Y., L. E. & W. R. Co. v. Enches, 17 Atl. Rep., 991.
12 21 N. E. Rep., 725.
13 B. & O. R. Co. v. Carr, 17 Atl. Rep., 1,052.
14 Eureka Springs R. Co. v. Timmons, 11 S. W Rep., 690.
15 Newman v. A. G. S. R. Co., 39 Fed. Rep., 819.
16 U. P. R. Co. v. Springsteen, 21 Pac. Rep., 774.
17 South Kan. R. Co. v. Crocker, 21 Pac. Rep., 788.
18 Bajus v. S. B. & N. Y. R. Co., 5 N. Y., Supp., 804.
19 G. C. & S. F. R. Co. v. Blohm, 11 S. W. Rep., 867.
20 St. L., I. M. & S. R. Co. v. Rice, 11 S. W. Rep., 699.
21 Int. C. R. T. R. Co. v. Fox, 21 Pac. Rep., 797.
22 Sobieski v. St. P. & D. R. Co., 42 N. W. Rep., 863.
23 K. C., Ft. S. & G. R. Co. v. Kier, 21 Pac. Rep., 770.
24 Swift v. Staten Island R. Co., 5 N. Y. Supt., 316.
25 Butts v. St. L., I. M. & S. R. Co., 11 S. W. Rep., 754.
26 Spooner v. D., L. & W. R. Co., 21 N. E. Rep., 696.
27 C. & A. R. Co. v. Adler, 21 N. E. Rep., 846.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Boston & Albany, quarterly, 2 per cent., payable Dec. 31.

Camden & Atlantic, 3 per cent. on the preferred stock, payable Dec. 9.

Connecticut River, quarterly, 2 per cent., payable Jan. 1.

Eastern, 6 per cent., payable Dec. 16.

Old Colony, 3½ per cent., payable Jan. 1.

Philadelphia, Wilmington & Baltimore, 3 per cent., payable Jan. 2.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Boston & Albany, annual, 78 Tremont street, Boston, Mass., Dec. 11.

Boston & Maine, special and annual, Lawrence, Mass., Dec. 11.

Cleveland & Pittsburgh, annual, Cleveland, O., Jan. 1.

Colorado Midland, special, Colorado Springs, Colo., Dec. 31, to act upon a proposed lease of the Rio Grande Junction.

Columbus, Hocking Valley & Toledo, annual, Columbus, O., Jan. 14.

Concord & Montreal, annual, Concord, N. H., Dec. 18.

Denver & Rio Grande, special, Denver, Colo., Dec. 31, to act upon a proposed lease of the Rio Grande Junction.

Duluth & Winnipeg, annual, Duluth, Minn., Dec. 12.

Eastern, special and annual, 18 Boylston street, Boston, Mass., Dec. 11.

Fort Worth & Denver City, annual, Fort Worth, Tex., Dec. 10.

Hudson Tunnel, annual, 2 Nassau street, New York City, Dec. 17.

Manitoba & Southeastern, annual, Winnipeg, Man., Dec. 10.

New York & New England, annual, 83 Tremont street, Boston, Mass., Dec. 10.

New York, Providence & Boston, annual, Providence, R. I., Dec. 11.

Richmond & West Point Terminal, annual, Richmond, Va., Dec. 10.

Santa Fe Southern, annual, Santa Fe, N. M., Dec. 9.

South Atlantic & Northwestern, special, 147 *Times* Building, 40 Park Row, New York City, Dec. 12.

Texas, Santa Fe & Northern, annual, Santa Fe, N. M., Dec. 9.

Wheeling & Lake Erie, annual, Toledo, O., Dec. 19.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *American Soci'y of Civil Engineers* will hold its next annual meeting at the rooms of the Society, 127 East Twenty-third street, New York City, Jan. 15, at 10 o'clock.

The *New England Railroad Club* meets at its rooms in the United States Hotel, Beach street, Boston, on the second Wednesday of each month, except June, July and August.

The *Western Railway Club* holds regular meetings on the third Tuesday in each month, except June, July and August, at its rooms in the Phenix Building, Jackson street, Chicago, at 2 p. m.

The *New York Railroad Club* meets at its rooms, 113 Liberty street, New York City, at 7:30 p. m., on the third Thursday in each month.

The *Central Railway Club* meets at the Tift House, Buffalo, the fourth Wednesday of January, March, May, August and October.

The *Northwest Railroad Club* meets on the first Saturday of each month in the St. Paul Union Station at 7:30 p. m.

The *American Society of Civil Engineers* holds its regular meeting on the first and third Wednesday in each month, at the House of the Society, 127 East Twenty-third street, New York.

The *Boston Society of Civil Engineers* holds its regular meetings at Boston, at 7:30 p. m., on the third Wednesday in each month. The next meeting will be held at the American House.

The *Western Society of Engineers* holds its regular meetings at its hall, No. 67 Washington street, Chicago, at 7:30 p. m., on the first Tuesday in each month.

The *Engineers' Club of St. Louis* holds regular meetings in St. Louis on the first and third Wednesdays in each month.

The *Engineers' Club of Philadelphia* holds regular meetings at the house of the Club, 1,122 Girard street, Philadelphia.

The *Engineers' Society of Western Pennsylvania* holds regular meetings on the third Tuesday in each month, at 7:30 p. m., at its rooms in the Penn Building, Pittsburgh, Pa.

The *Engineers' Club of Cincinnati* holds its regular meetings at 8 p. m. on the third Thursday of each month at the Club rooms, No. 24 West Fourth street, Cincinnati.

The *Civil Engineers' Club of Cleveland* holds regular meetings on the second Tuesday of each month, at 8:00 p. m., in the Case Library Building, Cleveland. Semi-monthly meetings are held on the Fourth Tuesday of the month.

The *Engineers' Club of Kansas City* meets at Kansas City, Mo., on the first Monday in each month.

The *Civil Engineers' Society of St. Paul* meets at St. Paul, Minn., on the first Monday in each month.

The *Montana Society of Civil Engineers* meets at Helena, Mont., at 7:30 p. m., on the third Saturday in each month.

The *Civil Engineers' Club of Kansas* holds regular meetings on the first Wednesday in each month at Wichita, Kan.

American Society of Civil Engineers.

A meeting of the society will be held Dec. 4, 1889, at twenty o'clock (8 p. m.) Ballots for membership will be canvassed and general business transacted. Discussions on the paper by John R. Freeman, M. Am. Soc. C. E., on The Hydraulics of Fire Streams, will be presented. Discussions on this paper and on other papers previously read will be in order. After the meeting a light collation, provided by subscription of resident members, will be served. The annual meeting will occur on Wednesday, Jan. 15, 1890, at 10 o'clock.

Arkansas Society of Engineers, Architects and Surveyors.

The third annual meeting of this society was held in Little Rock, Nov. 12 and 13. The following subjects were discussed: A General Road Law; Mines and Minerals of Pulaski and Saline Counties; Rights, Duties and Responsibilities of Surveyors; Hydraulic Rams, and other topics. On Wednesday afternoon a geological lecture was delivered, the public being invited and a large number being in attendance. Among the new members admitted were: H. G. Kelly, Principal Assistant Engineer, St. Louis, Arkansas & Texas, and F. S. Ingreasby, Assistant Engineer, Arkansas and Northwestern. The President of the society is W. P. Homan, and the Secretary, F. J. H. Rickon.

Boston Society of Civil Engineers.

A regular meeting was held Nov. 20, President Fitz-Gerald in the chair. Mr. Louis M. Hastings was elected a member. A paper by E. L. Abbott, on the freezing process of making excavations in wet ground, was read, accompanied by an interesting account of the sinking of a shaft through quicksand by this process at Iron Mountain, Mich.

Engineers' Club of Philadelphia.

A regular meeting was held Nov. 16, Vice-President Beardsley in the chair. Mr. William B. Spence, a visitor, exhibited and described a working model of the Rimmer oxidizer, a filtering material consisting of a mixture of granulated iron ore and carbon, called magnetic carbide of iron. The ore is cleaned and treated by a patented English process. The entire evening was spent in experiments, inquiries and discussion. Very muddy water was made apparently pure, and water impregnated with a compound almost black and of strong and unpleasant odor was made clear, and subsequent tests failed to discover in it any trace of impurities.

Engineers' Club of St. Louis.

The 314th meeting was held Nov. 20, President Meier in the chair. A number of amendments to the by-laws were adopted, including one, making the initiation fee $10. Mr. Robert Moore read a paper on railroad culverts, describing the various forms in use. He held that sewer-pipe over 15 in. in diameter should not be used, cast iron being the better material for larger sizes. Cast-iron pipe unfit for high pressures is available for this purpose. In the discussion Mr. M. L. Holman stated that iron pipe 6 ft. in diameter and 10 ft. long was being used for culverts.

Northwest Railroad Club.

The next meeting of the Club will be held Saturday, Dec. 7, at 7 p. m., in the Union Station at St. Paul. The subject for discussion is, The Purification of Feed Water, to be introduced by Mr. J. O. Pattee, of the St. Paul, Minneapolis & Manitoba.

Western Society of Engineers.

The 263d meeting was held in Chicago, Nov. 6, Mayor Creiger, Past President of the society, occupying the chair in the absence of the President. The Secretary announced the election of John E. Frohlund, Fremont Hill and George W. Waite as members. The society's membership having reached a total of over 250, Mr. A. Gottlieb was elected as additional representative on the Board of Managers of the *Journal of the Association of Engineering Societies*.

Mr. Liljencrantz read a paper on Compound Lumber, describing the product of the Compound Lumber Co., of Burnham, Ill., which consists of pinewood veneered with hard wood by a patented process. A large variety of samples was arranged for the inspection of members, and the paper was discussed by many. Mr. H. A. Stoltenberg read a paper on the Chicago drainage problem, giving his views why the question cannot be solved by the Desplaines River plan. Many members joined in the discussion. The Chairman called the attention of the society to the stock books of the World's Fair Committee.

PERSONAL.

—Mr. John Curry has been appointed Superintendent of Machinery for the Louisville & Jeffersonville Bridge Co.

—Mr. James F. Beattie has been appointed General Superintendent of Mines of the Sloss Iron & Steel Co., at Coalburg, Ala.

—Mr. G. A. Wilson, General Manager of the Interoceanic, of Mexico, has resigned, and will shortly leave Mexico for England.

—Mr. R. H. Talcott, Chief Engineer of the Seattle & Eastern Construction Co., has been elected Vice-President also, to succeed Mr. Paul F. Mohr, resigned.

—Mr. J. A. Edson, Division Superintendent of the Missouri Pacific at Atchison, Kan., has resigned, and will become Division Superintendent on the St. Louis, Arkansas & Texas.

—Mr. Thorston Berg, recently Chief Engineer at the Edgar Thomson Steel Works, Braddock, Pa., has accepted a similar position at the Homestead Works of Carnegie, Phipps & Co.

—Mr. James E. McNair, for some years connected with the Louisville, New Albany & Chicago, at Monon, has been appointed Superintendent of the Ohio Falls Car Works at Jeffersonville, Ind.

—Mr. C. W. Chears, General Freight and Passenger Agent of the Georgia Midland & Gulf, has resigned that position to become Assistant General Freight and Passenger Agent of the Central of Georgia, at Columbus, Ga.

—Mr. H. D. Hibbard, who has had charge of the melting department of the Linden Steel Co., has resigned to become Superintendent of the Hainesworth Steel Co., which is now controlled by the Oliver & Roberts Wire Co., of Pittsburg.

—Mr. C. E. Henderson, late General Manager of the Ohio, Indiana & Western, has been appointed General Manager of the Philadelphia & Reading Coal & Iron Co., at Pottsville, Pa., succeeding Mr. A. A. McLeod, who becomes Vice-President.

—Mr. J. W. Bucken, Master Mechanic, Columbus & Western division of the Central of Georgia, has resigned, and Jere Whitsett has been appointed in his stead. The employés of the road who were under the charge of Mr. Bucken have presented him with a fine gold watch.

—Mr. John Sutcliffe has resigned as General Manager of the Londonderry Iron Co., of Londonderry, N. S., and has returned to Poughkeepsie, N. Y., where he will open an office as Consulting Engineer and Contractor. Mr. R. G. Leckie succeeds Mr. Sutcliffe as General Superintendent of the company.

—Mr. Albert Fink, ex-Commissioner of the Trunk Line Association, arrived in New York City this week from Europe, looking in the best of health. He is accompanied by his daughter, who has spent the last two years in Europe. Mr. Fink will remain in New York but a short time, being bound for Louisville, where he expects to remain for some time.

—Mr. George Bidwell, Superintendent of the Madison Division of the Chicago & Northwestern, has been appointed General Superintendent of the Milwaukee, Lake Shore & Western. He has been succeeded as Superintendent on the Chicago & Northwestern by Mr. Robert H. Cowan, at present Assistant Superintendent of the Madison Division.

—Mr. F. W. Dean, of Boston, the well-known mechanical engineer, announces that he is prepared to furnish designs for compound locomotives and high-pressure boilers adapted to any kind of service, including designs for converting existing locomotives into compounds. He also offers to conduct tests of locomotives. Mr. Dean's address is 27 School street, Boston.

—Sir Samuel Morton Peto, of London, died recently at the age of 80. He was in his time one of the most noted engineers and politicians of Great Britain. His firm undertook the building of the houses of Parliament. He built the London, Brighton & South Coast Railway, as well as other railroads in England, and also lines in Norway and Denmark. His title of baronet was earned by his service in constructing a road from Balaklava to Sebastopol during the Crimean war.

—Mr. B. H. Bail, who has been Acting General Freight Agent of the Philadelphia & Reading for some time, has been appointed General Freight Agent. Mr. Bail is 40 years old, and was connected with the New York Central & Hudson River road for 13 years, and with the Merchants' Dispatch for six years. In 1881 he was appointed General Freight Agent of the Utica & Black River, and two years later to a similar position on the New York, West Shore & Buffalo. After leaving the latter road he became Traveling Passenger and Freight Agent of the Wabash in New York state. Mr. Bail entered the service of the Philadelphia & Reading in May, 1888, as Division Freight Agent, afterward being advanced to the positions of Assistant General Freight Agent, and, later, Acting General Freight Agent.

—Judge David J. Brewer, of the Eighth Circuit United States Circuit Court, has been nominated by the President to be an Associate Justice of the Supreme Court of the United States. Judge Brewer was born in Asia Minor, June 20, 1837, his father being a missionary to that country. He is a nephew of Justice Stephen J. Field. He was educated in New England, and graduated from Yale University in 1858. He began practicing law in Leavenworth, Kan., in 1859, and since then he has been Probate Judge of Leavenworth County and Associate Justice of the Supreme Court of Kansas for three terms of six years. In 1884 he resigned from the state bench to accept the appointment of United States Circuit Judge for the VIIIth Judicial Circuit, which consists of Arkansas, Colorado, Iowa, Kansas, Minnesota, Missouri and Nebraska. Judge Brewer has heard many of the important railroad cases in the West during the past three years, notably those connected with the Iowa laws reducing railroad rates, and his name has therefore become familiar. His high character and his conspicuous legal ability are universally recognized.

—Mr. Samuel Wilkeson, who recently retired from active duty as Secretary of the Northern Pacific (the directors granting him unlimited leave of absence with full salary), died at his home, in New York City, Dec. 2, of heart failure. He was born at Buffalo on May 9, 1817, and after graduation from Union College studied law, and in 1840 was admitted to the bar. He engaged in journalism in Buffalo and New York, and later became an editorial writer on the New York *Tribune*, which he served as war correspondent during the civil war. At the request of Jay Cooke, the fiscal agent of the government, Mr. Wilkeson undertook to popularize the sale of the war loans, which he accomplished with wonderful success. In December, 1868, the owners of the Northern Pacific charter applied to him for help in regard to legislation in Congress. Some time after Mr. Wilkeson accompanied the first engineering party, under the charge of W. Milnor Roberts, sent over the proposed route. He was elected Secretary of the company in March, 1870, and held the office without interruption to the day of his death. Of his work in this position President Oakes said at the meeting of the directors on Oct. 17, the first meeting after the last annual election:

"He has been a laborious and devoted servant of this corporation for over 21 years. His work speaks for itself. In prominent journals he has helped the Northern Pacific Railroad with articles that were invariably effective. He has on request supplied committees of Congress in Washington with reports on measures concerning this corporation, which were accepted and used in the confidence reposed in the writer's reputation for truthfulness and ability to discuss public questions. His subordinate and less important work of recording the proceedings of our board of directors, its executive committee, its finance committee, its purchasing committee under the forclosure of its first morgage, and innumerable special committees, speaks for itself." Mr. Wilkeson leaves a widow, a daughter and two sons.

ELECTIONS AND APPOINTMENTS.

Alabama Midland.—J. C. McKenzie has been appointed Superintendent of Transportation, with headquarters at Montgomery, Ala.

Albany, Florida & Northern.—The incorporators of this road met in Albany, Ga., Nov. 26, and the following officers were elected: Nelson Tift, President; S. H. Hawkins, Vice-President; W. E. Mitchell, Secretary and Treasurer. The directors are S. R. Weston, T. N. Woolfolk, S. B. Lewis, N. F. Tift, C. B. Wooten and G. M. Byne.

Atlanta & West Point.—Captain E. L. Tyler has been appointed General Manager of this road, and of the Western of Alabama and Cincinnati, Selma & Mobile lines, with headquarters at Montgomery, Ala.

Birmingham & Shades Mountain.—D. P. Hall has been elected President of this Alabama company, J. G. Foulks, Treasurer, and W. M. Hale, Secretary. The office is in Birmingham.

Black River Falls & Eastern.—The following are the directors of this company: Hugh H. Price, Black River Falls, Vice-President; W. C. Jones, W. S. Dwinnell, D. J. Spaulding and J. W. Cole.

Boston, Revere Beach & Lynn.—The following were elected directors at the recent annual meeting in Boston: Isaac P. T. Edmands, Matthew Bolles, Amos F. Breed, Joseph W. Smith, David H. Sweetser, Jesse Tirrell, Edward Tyler and Joshua B. Richmond.

Bridgton & Saco River.—At the recent annual meeting of the road, William F. Perry was elected President; P. P. Burnham, Treasurer, and Joseph A. Bennett, Superintendent.

Buckhannon & Holly River.—The following are the incorporators of this company: W. J. W. Cowden, of Wheeling; William Reed, Richard Dietrich, William E. Walters, James W. Miller, B. W. Vandegrift, B. C. Christy, Hugh Ferguson, F. S. Christy, of Pittsburgh, and J. P. Ross, of Belleview.

Central of Georgia.—De W. C. Royland has been appointed General Superintendent of Transportation at Savannah, Ga., to succeed E. L. Tyler, resigned to accept service with another company.

W. J. Haylow has been appointed Superintendent of the Columbus & Western Division, with office at Columbus, Ga.

Chattanooga Southern.—The officers of this company now are J. W. James, President and General Manager; Harry L. Kirk, Secretary, and Franklin Harris, Treasurer, with office in Chattanooga, Tenn.

Chicago, St. Paul & Kansas City.—Frank H. Tibbets has been appointed Assistant General Freight Agent of the road, with headquarters at Chicago.

Cincinnati, Hamilton & Dayton.—M. S. Conners, Master of Transportation, has been appointed Superintendent of the Cincinnati division of the main line and of the Indianapolis division, at Cincinnati, and M. Mounts, Master of Transportation of the Toledo division, has been appointed Superintendent of the Dayton & Michigan division, at Toledo.

Columbus, Hocking Valley & Toledo.—James Bruce has been appointed Superintendent of the Toledo division, with office at Toledo, O.

Columbus Southern.—The following are the directors and officers of this company: T. J. Pearce, of Columbus Ga., President; Col. Nelson Tift, of Albany, Vice-President; C. B. Grimes, of Columbus, Treasurer; W. A. Little, of Columbus, General Counsel; Maj. W. S. Greene, of Columbus, Chief Engineer. Directors: B. H. Hood, Dawson; Nelson Tift, Albany; James A. Lewis, Columbus; T. E. Blanchard, Columbus; J. P. Kyle, Columbus; John Stephens, Cusseta, and Samuel A. Carter, Columbus.

Denver & Rio Grande.—M. H. Rogers has been appointed Resident Engineer of this road at Denver, Col.

Dover & Statesboro.—The following are the directors of this Georgia company: J. H. Buckhalter, F. T. Lockhart, J. A. Fleming, of Augusta, Ga., and J. E. Hogan, of Dover.

Duluth & Winnipeg.—The following are the officers: Hon. A. W. Wright, President, Alma, Mich.; W. H. Fisher, Vice-President and General Manager, St. Paul, Minn., and W. H. Knowlton, Cloquet, Minn.

Evansville, Newburg & Rockport.—The incorporators of this Indiana company are: W. Heilman, D. J. Mackey, F. W. Cook, W. J. Wood, Lee Howell, C. F. Hopkins, Joseph Cox, L. S Hurd, J. N. Kehoe, J. D. Cornick, George Wheeler and G. Muhlhausen, of Evansville, Ind.

French Broad Valley.—The following are the officers of this company: C. G. Dyott, President and General Manager, 52 Wall street, New York; W. M. Cocke, Jr., Vice-President, New York; H. M. Ramseur, Superintendent and Chief Engineer, Asheville, N. C.; E. B. Williams, Secretary and Treasurer, New York, and J. E. Rankin, Assistant Treasurer, Asheville, N. C.

Grand Tower & Cape Girardeau.—The following are the officers of this company: E. A. Hitchcock, President, and O. S. Garrison, Treasurer, both of Fourth and Market streets, St. Louis, Mo.; J. D. Peters, Superintendent, Murphysboro, Ill., and P. R. Van Frank, Chief Engineer, Cape Girardeau, Mo.

Grand Trunk.—John Weatherston, of the Toledo, Saginaw & Muskegon has been appointed Roadmaster of the Detroit and Michigan Air Line divisions of this road.

Idaho, Nevada & California.—The following are the officers of this Nevada company: President, C. W. Hinchcliffe, Austin, Nev.; Vice-President, George Shoupe, Boise City, Idaho; Secretary, W. J. Hilands, Cleveland, O.; Treasurer, Samuel P. Dunn, East Aurora, N. Y., and Chief Engineer, C. W. Irish, Reno, Nev.

Illinois Central.—G. J. Aycock has been appointed Master of Transportation of the road, and will also have charge of the machinery department of the main line.

Iowa & Nebraska.—The incorporators of this Iowa company are: George C. Kimball, President; Carrol Wright, Secretary; F. H. Griggs, R. J. Phelps and J. H Windsor.

Montgomery & Erie.—At a receet meeting in Newburg, N. Y., the stockholders elected a Board of Directors and the following officers: President, J. M. Wilkin; Vice-President and Treasurer, C. J. Everett; Secretary, W. J. Mead.

Philadelphia & Reading—B. H. Bail has been appointed General Freight Agent, with office in Philadelphia.

Portersville & Tulare.—This company has been incorporated in California by Philip N. Lilienthal, W. H. Chickering, Leon Sloss, Louis Sloss, Jr., and William Thomas.

Richmond, Fredericksburg & Potomac.—C. A. Taylor has been appointed Traffic Manager, with office at Richmond, Va.

St. Joseph, St. Louis & Sante Fe.—W. B. Strong having resigned as President, Allen Manvel has been elected to fill the vacancy. J. H. Reinhart, Fourth Vice-President of the Atchison, Topeka & Santa Fe, has been elected Fourth Vice-President of this road also.

San Domingo Central.—At a meeting of stockholders of the road, held at 32 Liberty street, New York, Dec. 3, the following were elected directors: H. C. King, H. L. Beam, B. P. Harris, G. G. Ward, Milton Griswold, W. H. Bibby, C. C. Monroe, J. E. Coleman and H. W. Alden.

Sand River.—The annual meeting of the company was held in Phillips, Me., last week. The following officers were elected: President and Superintendent, N. B. Beal, Phillips; Clerk, Daniel M. Bonney; Treasurer and General Ticket Agent, J. E. Thompson, Phillips; Directors, N. B. Beal, Phillips; D. M. Bonney, J. H. Bonney, Farmington; G. D. Willes, Bath; Joel Wilbur, Phillips.

Seattle, Lake Shore & Eastern.—At a meeting of the stockholders of this company held at Seattle, Wash., Nov. 22, the following directors were elected: J. R. McDonald, W. H. Aiken, G. G. Lyon, T. T. Minor, John Leary, F. H. Osgood, Jacob Furth, J. N. Bryant, T. M. Logan, J. A. Jameson, M. S. Paton, J. F. Alexander and J. B. Pace.

Southern Passenger Association.—At the annual meeting of the Association held in Atlanta Dec. 3, the old officers were re-elected as follows: Commissioner, T. H. Carter; Assistant Commissioner, Mercer Slaughter; Secretary, George Jones; Auditing Committee, B. W. Wrenn, E. T. Carlton, and C. A. Taylor.

Toledo, Ann Arbor & North Michigan.—J. B. Conners has been appointed Superintendent of this company's lines, with headquarters at Owosso, Mich., after Dec. 15. The office of Master of Transportation has been abolished.

Union Pacific.—J. B. Frawley has been appointed Division Passenger Agent of the road at Kansas City, to succeed John Scott, appointed Assistant General Freight Agent.

Vaudreuil & Prescott.—The following are the officers of this company: J. B. A. Mougenois, President; H. McMillan, Secretary, and J. M. Shanly, Chief Engineer. The chief office is at 44 Imperial Building, Montreal, Province of Quebec.

West Shore.—Percy R. Todd has been appointed General Freight Agent of this line and of the Wallkill Valley and Syracuse, Ontario & New York roads, with office at No. 5 Vanderbilt Avenue, New York City. Communications relating to the freight departments of these roads should be addressed to him.

OLD AND NEW ROADS.

Alabama Midland.—Tracklaying has been completed to Brundidge, and will probably reach Troy, five miles further north, this week. Trains will then be put on between Troy and Bainbridge, Ga., 81 miles, the bridge over the Chattahoochee River near Bainbridge having been finished. The force now working south of Troy is to be transferred to the section near Montgomery.

Amherstburg, Lake Shore & Blenheim.—Tenders will shortly be asked for the construction of this road through Colchester to Amherstburg, at the west end of the line, and through Harwich to Blenheim, at the east end. The branch from Amherstburg to Windsor will be a matter for subsequent consideration. This company received a grant of $64,000 from the Dominion Parliament last session, being a subsidy of $3,200 per mile on the first 20 miles of the road. The distance from Amherstburg to Blenheim is 60 miles.

Austin & Northwestern.—It is reported that grading will probably begin immediately on the proposed extension from Burnett west to Llano, Tex., a distance of 25 miles. The survey for the line was made some months ago, but since then no active work has been done.

Aylmer & Port Burwell.—A meeting of the directors of this road was held at Aylmer, Ont., last week, when it was decided to make immediate application to the Ontario Legislature for a charter to build a road from Port Burwell to a point in North Dorchester or North Oxford, via the village of Vienna and the town of Aylmer.

Baie des Chaleurs.—Henry McFarlane, who built the first 60 miles of this road, has taken an action for $417,000 against the company and the chief contractor, C. N. Armstrong. The committee appointed by the government to investigate the claims of the laborers, that the wages due them were withheld, and that they were otherwise harshly dealt with, has made a preliminary report. The government has sent $28,000 to Carleton, Que., to be paid to the men, this sum to be taken out of the subsidy voted by the Quebec Legislature, all of which is not yet paid.

Belleville & East St. Louis.—This company has been chartered in Illinois, with a capital stock of $500,000, to build a road between Belleville and East St. Louis. The same incorporators have also chartered the Belleville Terminal, with a capital of $100,000, to build a belt line at Belleville. Julius Kohl, of Belleville, is President.

Belleville & Lake Nipissing.—This company is again applying to the Canadian Parliament for an amendment to its charter to enable it to increase its capital stock and bonding power per mile, and to extend the time allowed it for finishing the road.

Birmingham & Shades Mountain.—This road, recently chartered in Alabama, is intended to be a suburban line about 10 miles in length, to connect the city of Birmingham, Ala., with Hale's Springs on the elevated 'ands on Shades Mountain, about 500 ft. above the city, where a summer and winter resort is to be made. There will be a large fruit traffic, and several coal and ore mines will also be reached. The company will probably build the road with its own forces, not giving out any contracts. For a short distance there will be a three per cent. grade. There will be no iron bridges and the work generally is light. D. P. Hale, of Birmingham, is President.

Black River Falls & Eastern.—It is claimed that arrangements have been completed to let the contracts and begin construction on the road early next spring. It is to extend from La Crosse to Black River Falls, and to Wausau, Wis., over 100 miles, but work will only be begun on 30 miles next spring. The American Finance Co., 96 Broadway, New York, are the financial agents. Hugh H. Price, of Black River Falls, is President.

Buckhannon & Holly River.—This is a line now under survey from Braxton Court House, W. Va., down the Elk River to Charleston, W. Va. The main line will commence at Philippi, in Barbour County, W. Va., and follow the Buckhannon River past Buckhannon, and through the mountains at Hull's Gap. From there it follows the back fork of the Elk River and Sugar Creek to Webster C. H. A branch will begin at Braxton C. H., and run up the Elk River to the mouth of the Holly River, then to a pass known as Nyer's Gap, which will be crossed by a tunnel 1,000 ft. in length. The route is then down the Marsh Fork to an intersection with the main line on the Buckhannon River near McColley's. The road will be 117 miles long.

Canada Eastern.—An arrangement has been completed for the amalgamation of the Northern & Western and the Chatham road under the above name. The Northern & Western extends from Chatham Junction to Fredericton, N. B., 108 miles, with a nine-mile branch, and the Chatham road extends from Chatham Junction to Chatham, 11 miles.

Canadian Pacific.—The Souris branch is now graded within two miles of Melita, Man., and will be completed to the coalfields early in the spring. There has been a delay in tracklaying on account of the difficulty of get ting rails transported to the point where they are needed. The Canadian Pacific has large quantities of material to forward to the Great Northwest Central and to the Qu'Appelle, Long Lake & Saskatchewan roads, and on that account has been unable to furnish all the cars needed for the traffic.

An officer of this company is quoted as saying that the proposed extension from Toronto to Sudbury will shortly be put under contract and rapidly completed. The proposed route is from Kleinburg on the Toronto Grey & Bruce section to Barrie, and north to a point a little west of Coldwater, Ont.

Central of Georgia.—The Eden extension has been completed from Eden to Sterling, Ga., where a connection is made with the Savannah, Americus & Montgomery. Local freight is now being received for Savannah.

Central (New Brunswick).—All the construction hands have been discharged from this road, which is now ready for final inspection by the Provincial and Dominion authorities. This line has been doing a very good business during the past summer, and the traffic is steadily increasing. A large part of the line has been carefully ballasted, and this work will be continued in the spring. The St. Martins & Upham division has been ballasted to McAfee's, a distance of about 17 miles, and the rest will be finished next spring. Trains will be running to St. Martins by March 1.

Chattanooga Southern.—The company is soon to apply for a charter in Tennessee and Alabama. The company at present has a charter from Georgia for a line 60 miles long. The road has been located from a point on the Georgia state line near Chattanooga, Tenn., in a southerly direction, to the east side of the Lookout Mountain, and to the Alabama line. Engineers are now in the field, but no general location has been adopted, nor have complete arrangements for construction been made. About three miles of road has been built. J. W. James, of Chattanooga, is President and General Manager.

Chesapeake & Ohio.—The earnings and expenses for October were as follows:

	1889.	1888.	Inc.
Mileage	915	754	161
Gross earnings	$823,235	$473,821	$149,414
Oper. expenses	422,539	360,152	62,387
Net earnings	$200,696	$113,669	$87,027

Chicago, Burlington & Quincy.—The upper house of the St. Louis Municipal Assembly has granted this road a free and unobstructed entrance into the city from the northern line to its terminal grounds at Second street and Franklin avenue, where it is understood the company will erect a passenger station.

Chicago, St. Paul, Minneapolis & Omaha.—By a decision of the Supreme Court of Wisconsin the company is confirmed in the possession of a land grant worth about $6,000,000. The grant was obtained through the payment of $70,000 and an agreement with the Chicago, Milwaukee & St. Paul that that road should participate in the grant to the extent of one-fourth. This agreement was repudiated by the former company later, and the repudiation is now confirmed by the Supreme Court.

Cincinnati & Bedford.—The section of this road now under construction is 6½ miles long from Rivervale, on the Ohio & Mississippi road, of which the line is a branch, northwest to the White River, which will be crossed by a three-span iron bridge. The grades of the road are two per cent. going east, and one per cent. going west. The curves are 6½ deg. Oliver Ferguson & Son, of Bedford, Ind., are the contractors.

Clarinda & St. Louis.—The Receiver of this road has informed the Iowa State Railroad Commissioners that it is the intention to abandon the line and dispose of the material. The road extends from Roseberry, Mo., to Clarinda, Ia., 21 miles, and, the Receiver says, was built in 1879 and 1880 by the St. Louis, Kansas City & Northern as its Clarinda branch, at a cost of about $8,000 a mile. It was bonded for $12,000 a mile, the whole issue of bonds, $264,000, being a first lien. From the proceeds of these bonds chiefly the road was built. In 1880 the St. Louis, Kansas City & Northern, by consolidation with the Wabash, became the Wabash, St. Louis & Pacific, which latter company operated the property in question until May 29, 1884, when a Receiver was appointed. The Receiver has now arranged by authority of the Federal Court to sell the one locomotive and passenger coach and the iron rails as soon as they can be taken up. There is no other property except a small number of lots in Clarinda. No interest has been paid on the bonds since Aug. 1, 1884. There will not be derived from the sale more than $40,000, so that after paying the expenses of the receivership there will remain for the bondholders less than 3 per cent. of their whole debt.

Cleveland, Cincinnati, Chicago & St. Louis.—Arrangements are being made to put a force at once on the extension of the double track from near Cincinnati to Lawrenceburg, 25 miles.

Columbus Southern.—The tracklaying on this road has been completed from Columbus, Ga., for 40 miles. It is expected to have all the grading between Columbus and Albany, 87 miles, completed by the end of this month, and the road will probably be in operation by March 1. The grading and tracklaying is being done by the Chattahoochee Brick Co., of Atlanta, Ga. Grading was commenced at Columbus Jan. 1, 1889, and has been done with convict labor, except on the section from Dawson and Albany. The road passes through Cusseta, crosses the Savannah, Americus & Montgomery at Richland, crosses the Southwestern road at Dawson, and thence to Albany. The stations and distances in miles from Columbus will be: Van Horn s, 10¼; Cusseta, 18; Gobbler's Hill, 23; Green Hill, 27; Pearson's, 34; Richland, 38¾; Weston, 45; Parrott's, 56; Dawson, 64; station near Sasserrville, 72; station near Oakland, 75; station near Palmyra, 80, and Albany, 87 miles from Columbus. The engines have been purchased of the Rhode Island Locomotive Works, the passenger cars of Jackson & Sharp, Wilmington, Del., and the freight cars of the United States Rolling Stock Co. The iron bridges were built by the Phœnix Bridge Co. The following are the amounts subscribed by the different counties through which the line passes: Muscogee, $50,000; Chattahoochee, $8,500; Stewart, $6,000; Webster, $3,600; Terrell, $30,000, and Dougherty, $25,000.

Continental.—The Mexican Government has granted a concession for standard gauge lines to extend from the city of Matamoras to the Guatemalan border and to Yucatan. The concessionaire is Feliciano San Roman. This is the most extensive system for which a concession has yet been granted in Mexico. The government grants a subsidy in 5 per cent. bonds of $8,000 per kilometre. In all recent concessions 6 per cent. bonds have been named. The lines are as follows: From the port of Matamoras to Tuxpam, following the Gulf Coast; from Tuxpam, to connect with the Tehuantepec road; from the point of connection with the Tehuantepec road to an intermediate point between any port of Yucatan, Campeche or Tabasco; from a point on this line to the Guatemalan frontier, and from the port of Tuxpam to the City of Mexico. Certain branch lines are also mentioned, but plans for these are to be presented within five years, or the right to build them will expire. The company is to begin preliminary surveys at once, in sections of at least 25 kilometres each. Construction must begin within two years, and the entire system to be completed in 20 years. With each 300 miles constructed the corresponding subsidy bonds will be issued, these bonds to be redeemed in 25 years. Within three years 60 miles at least must have been built on one of the lines, and in each two years thereafter at least 125 miles on any one of the lines, and work must be completed on any line on which work is once begun within five years.

Dallas, Pacific & Southeastern.—Nearly all the grading between Dallas and Rhome, Tex., about 75 miles, is now finished, and tracklaying will probably be commenced this month. Burkett & Murphy, of Palestine, Tex., and Burns & Peters, of Dallas, Tex., are the contractors.

Denver, Colorado Canon & Pacific.—On Monday last the surveying expedition started for Grand Junction to complete the survey of this road. The party will consist of twelve men under Robert B. Stanton, Chief Engineer, and John Hislop, Assistant Engineer. They will probably be absent from Denver for five months. The trip down the Colorado and Grand rivers will be made entirely by boat. Four hundred miles of the new railroad have been surveyed from Grand Junction through Utah to where the Green and Grand rivers empty into the Colorado, thence following the banks of the Grand River down through Piute and Iron counties, Utah, to the Marble Cañon. The line will pass through the Grand Cañons of the Colorado, Cataract Cañon, through Marble Cañon in Arizona, and thence to the Gulf of California. There yet remains 700 miles to survey. The expedition will establish whether there is a practicable railroad route from Denver to the Gulf of California by the Colorado River. Headquarters will at first be at Green River, Utah, and will be removed to Peach Springs, Ariz., about Dec. 15.

Detroit & St. Clair River.—It has been reported recently that this company has made arrangements with the Michigan Central, by which that company will build the road between St. Clair and Detroit, via Marine City. Much of the right of way for the line has been secured.

Digby & Annapolis.—The contractors of this road between Annapolis and Digby, N. S., are making good progress in its construction and have the grading nearly all completed. It is the intention to carry on the work all winter to complete the line early in the spring.

Downington & Lancaster.—Construction work on the extension from New Holland to Lancaster, Pa., was begun last week at New Holland. Kellar & Crossen are the contractors. It is expected to have the extension completed by June 1. S. C. Slaymaker is engineer.

Duluth & Winnipeg.—This road has now been opened for traffic to the Mississippi River. It starts at Cloquet, Minn., where it connects with the St. Paul & Duluth, and follows the St. Louis River for about 30 miles; thence in a northwesterly direction to the Mississippi River, a distance of 70 miles. The maximum grade on the line is 15 ft. per mile and the curves are four degrees. W. H. Fisher, of St. Paul, is General Manager.

East Chicago & Lake Michigan.—This company has been incorporated in Indiana to build a road seven miles long in Lake County. Thomas W. Johnson is President.

Erie & Huron.—This company will apply to the next Parliament for power to construct a road from a point on the present line, at or near Dresden, Ont., by way of Oil Springs, to Petrolia, Lambton County, and thence to Sarnia, to connect with the company's line there. Also a line from a point between Oil Springs and Dresden, via Florence, to a point on the Grand Trunk east of Thamesville. The company also proposes to arrange with the holders of the five per cent. mortgage bonds for the surrender and cancellation of those bonds, and to issue in lieu thereof new four cent. bonds at the rate of $15,000 per mile.

Evansville & Richmond.—This line has been opened for regular traffic to Seymour, Ind., 65 miles from Elnora. The road has been completed for some time. Altogether, 82½ miles of road has been constructed this year, all of which will be put in operation about Jan. 1 next. This piece of road extends from Elnora through Bedford and Seymour to the west, or rather southwest, line of Bartholomew County, to the point known as Sand Creek. The proposed extension of this line from Sand Creek to Richmond will be unusually light work, with easy grades and light curves. The contract for grading has been already let to Oliver Ferguson & Sons, of Bedford, Ind., who built the line from Elnora to Sand Creek. At present there are no men at work on account of the winter weather. There will be no tunnels on the extension and but one bridge of any note, and this will be at Richmond. On the work done this season there is one tunnel 900 ft. in length, and an iron bridge with two spans 150 ft. each over White River, and two combination bridges, 125 ft. each, over Salt and Indian creeks. The work of extending the line will be prosecuted with vigor early in the spring, and preparations for the work will be made this winter. F. A. Allen, of Evansville, Ind., is Chief Engineer.

Fort Madison & Northwestern.—At Iowa City, this week, the Federal Court heard the exceptions to the report of the sale of the Fort Madison & Northwestern narrow-gauge road at Fort Madison last November, and set the sale aside, ordering a new sale. The purchase was made by the Fort Madison, Birmingham & Western and the amount bid was $37,000.

Fort Worth & Rio Grande.—The tracklaying on the extension toward the Colorado River was completed to Dublin, Tex., 20 miles from Granbury, Nov. 25. The contract for the grading from a point on the dividing line between Erath and Comanche Counties, southwest to Comanche, has been let to Martin & Burns, of Colorado City, Tex.

French Broad Valley.—The contracts for grading and tracklaying on this road will be let, it is stated, in about three weeks. The road will extend from Asheville, N. C., to Wilson's, 30 miles, and south to a point not yet decided upon. The grading will be fair, with maximum curves of six degrees and maximum grades of 30 ft. to the mile. Charles G. Dyott, 52 Wall street, New York, is President.

Georgia Southern & Florida.—The first through train over this road from Macon, Ga., south through Valdosta, Ga., and Lake City, Fla., to Jacksonville, was run Dec. 1, in eight hours. Trains are run over the Florida Central & Peninsular between Lake City and Jacksonville, 57 miles. The line from Lake City to Palatka will probably be opened soon after the first of the year.

Goderich & Canadian Pacific Junction.—This company will apply to the Dominion Parliament for amendments to its charter, giving it power to construct the road via Dungannon, Ont., to build a branch to Port Albert, on Lake Huron, to allow the company to amalgamate with the Canadian Pacific, and to extend the time for the commencement and completion of the road.

Great Northwest Central.—A meeting of the stockholders will be held in London shortly at which new directors will be elected, the policy of the company as to encouraging emigration settled, and other matters of organization decided upon. A. Charlebois, who has about completed the first 50 miles, will receive the contract for the second section of 50 miles, and will continue operations in the early spring. By the close of 1890 it is claimed that 150 miles of the road will be in operation.

Hants Central.—The Railway Committee of the Canadian Parliament last week heard arguments made by two companies which are trying to secure subsidies of $370,000 voted by the government. In 1886 a Dominion subsidy of $185,000 was voted to a road from Truro to Windsor, N. S., via Maitland, 58 miles. A provincia subsidy of a like amount is promised. Two companies

the Hants Central and the Stewiacke & Lansdowne now claim these subsidies. The latter owns a small road which it is proposed to extend, from near Brookfield through Hants, over practically the same route as surveyed by the former company. This route keeps three miles from Maitland, and passes within 20 miles of the Springhill coal mine. The decision of the committee will be rendered in a few days.

Houston East & West Texas.—The District Court at Houston, Tex., has ordered the sale of this road, to take place March 11, but to be sold for not less than $1,200,000. The company's lands were adjudged not be subject to mortgages, but proceeds to be distributed among simple debts. The decree establishes priorities as previously established with three exceptions.

Houston & Texas Central.—Construction is soon to commence on a short branch of this road from Hutchins southwest to Lancaster, about five miles. The contract has already been let.

Idaho, Nevada & California.—The preliminary survey for this road is now in progress, and it is expected to have it completed by April 1. The road is to be bonded for $20,000 a mile, and the officers claim that the company has already completed arrangements for placing the bonds. The proposed route is 600 miles long, as follows: From near Battle Mountain, Nev., at a junction with the Nevada Central and Central Pacific roads to Butte City, Mont., and Lewiston, Idaho, via Tuscorora, Nev., South Mountain and Silver City to Boise City, then north to Big Payette Lake, Mont., which will be the junction point of the branch to Lewiston, Idaho, where connection will be made with the Northern Pacific. From Big Payette Lake the main line will continue northeast to Salmon City and Butte City, Mont. The officers are given in another column.

Kansas City, Watkins & Gulf.—The grading is now finished on the first 28 miles of this road, from Lake Charles, La., north. Tracklaying will begin in about two weeks. The location has not been completed beyond the thirty-fifth mile, but when one of the three routes now under consideration has been adopted the grading forces will be transferred to that section. Kennedy & Stone, of Topeka, Kan., are the contractors.

Kinderhook & Hudson.—The grading on this road, which, as stated a few weeks ago, is nearly completed, has been done by Cameron & Clarke, of Plainfield, N. J. Moffett, Hodgkins, and Clarke, of Syracuse, are doing the track laying, which it is expected to have completed by Jan. 1. The contracts for bridges, rails, ties and all other material have been let and all the materials are now on the ground. The road is 18 miles long and commences at Kinderhook station, on the Boston & Albany, extending through Valatie, Kinderhook Village, Stuyvesant Falls, Stockport, and Stottsville to the Boston & Albany and thence over that road to Hudson, N. Y. J. V. Clarke, 34½ Pine Street, N. Y., is largely interested in the company. E. G. Ferris, of Hudson, is Chief Engineer.

Kingston & Pembroke.—The company has a subsidy of $60,000 from the government to build the proposed extension from Renfrew northwest to Eganville, Ont., a distance of 23 miles, and the line will soon be put under contract if the company is voted the municipal bonuses which it has asked. T. W. Nash, of Kingston, Ont., is Chief Engineer.

Lake Shore & Michigan Southern.—The following table shows the earnings and expenses for the quarter and nine months to Sept. 30:

Quarter to Sept. 30.	1889.	1888.	Inc. or dec.
Gross earnings	$5,161,910	$4,680,850	I. $481,060
Oper. expenses	3,056,997	2,811,172	I. 245,825
Net earn	$2,104,913	$1,869,678	I. $235,235
Other income	65,052	13,214	I. 51,838
Total	$2,169,965	$1,882,892	I. $287,073
Fixed charges	1,040,052	1,046,869	D. 6,817
Surplus	$1,129,913	836,023	I. $293,890
Jan. 1 to Sept. 30.			
Gross earnings	$13,991,605	$13,348,748	I. $642,857
Oper. expenses	8,761,719	7,955,394	I. 806,325
Net earnings	$5,229,886	$5,393,354	D. $163,468
Other incomes	235,899	120,217	I. 115,682
Total	$5,465,785	$5,513,571	D. $47,786
Fixed charges	3,162,523	3,198,173	D. 35,650
Surplus	$2,303,262	$2,315,398	D. $12,136

Lancaster & Hamden.—The company has filed for record in Ohio a mortgage for $1,500,000, made in favor of the Central Trust Co. of New York. An increased force will probably be put on the grade near Lancaster in a short time.

Little Falls, Mille Lacs & Lake Superior.—The survey of this road has just been made from Little Falls, Minn., as far as the south bay of the Mille Lacs lake, a distance of 38 miles.

Louisville & Nashville.—The earnings for October and the four months to Oct. 31 were as follows:

Month of October:	1889.	1888.	Inc.
Gross earnings	$1,786,496	$1,437,054	$331,412
Oper. expenses	993,562	878,580	114,982
Net earnings	$774,934	$558 474	$216,400
Four months, July 1 to Oct. 31:			
Gross earnings	$6,469,687	$5,511,247	$958,440
Oper. expenses	3,721,681	3,442,383	279,298
Net earnings	$2,748,006	$2,068,864	$679,142

Lynchburg & Durham.—Codwise & Allen, who have the contract for tracklaying on this road, are pushing their work rapidly and have the road completed to within two miles of Halifax Court House, Va., about 15 miles south of Brookneal. The grading has been finished to Halifax C. H. by Carrington & Kelly, who will soon move their forces to Durham, N. C., and finish the 10-mile contract from Durham north. The piers and trestles at Halifax C. H. over the Bannister River are completed. The banks to the trestles are 30 ft. high and are being riprapped through the lowest ground. Col. Cheatwood, who has a subcontract from Carrington & Kelly for the work between Halifax C. H. and South Boston, has the grading nearly done, and is at present filling in nearly 20,000 yards of earth at South Boston, which will complete his contract. It is expected that the company will commence running regular trains to Halifax C. H. as soon as the track is laid and surfaced, probably in December. Maj. J. W. Goodwin, of Lynchburg, Va., is Chief Engineer.

Maine Central.—The annual report shows that the total number of passengers transported for the year was 1,758,088, an increase over the previous year of 236,237, or 15.52 per cent. The total amount of freight transported over the main line and branches for the year was 1,320,326 tons, an increase over the previous year of 318,392 tons or 31.49 per cent. The earnings for passengers were $1,645,335; for freight, $1,991,019, and for mails, baggage, express, etc., $191,806; total gross earnings for 12 months were $3,828,161.

Manistee & Northeastern.—Two hundred men are now working on the northern 20 miles of this road between Manistee and Traverse City, Mich. The distance between these points is 60 miles. J. J. Hubbell, of Manistee, is Chief Engineer.

Manitoba & Southern.—This company has been voted a land grant at the rate of 6,400 acres per mile by the Canadian government for a road to be constructed from Deloraine, Man., to the coalfields at Turtle Mountains. G. R. Crowe, C. H. Campbell and David Hyssop are directors of the company.

Manitou & Pike's Peak.—About 500 men are now working on the lower end of this line, and 4½ miles of grading has been finished. With the exception of a short piece on the top of the mountain, all the grading will probably be completed by the spring. Tracklaying will begin about Feb. 1.

Mexican Central.—Work is going on at both ends of the Tampico division, 30 miles being completed east from San Luis Potosi and 144 miles west from Tampico. Only 107 miles remain to be constructed, and on this gap, nearly all of which is graded, the rails are being laid at the rate of two miles per day. The company hopes to complete the branch about Feb. 1. The heaviest portions of the Tampico division are completed; the remaining work to be done is light, as the uncompleted portion is through a level country.

Mexican Southern.—Four sections of engineers are locating the line between Tecomavaca and Oaxaca. The grade will be rising from Tecomavaca Las Sedas, which is the highest point between the two places and is 1,700 metres above the sea-level. Soon after leaving Tecomavaca the Rio Salador will be crossed by a long bridge. On the 40 miles to Las Sedas, the work will be heavy, with much bridging and tunneling in the Mizteca country about Nochixtlan. The heaviest work will be in the canyon of the Tominguin river, a distance of 22 miles, where in some places the cost of construction will amount to $120,000 per kilometre. From Las Sedas the line descends into the rich valley of Oaxaca, where the work will be light.

Midland (Indiana).—That part of this road in Montgomery County, Ind., was sold this week at sheriff's sale to L. P. Dickinson, of Chicago, who, it is understood, has arranged to extend the line west.

Milwaukee & Northern.—The Oconto & Southwestern has passed into the control of this company. It is a line 14 miles long just completed from Stiles, on the Milwaukee & Northern, northwest to Oconto, Wis.

Missouri, Kansas & Texas.—The executive committee of the road has issued an address to the holders of the five and six per cent. bonds and to the stockholders. It states that immediately after the plan for reorganization of Oct. 23 was issued the seven per cent. bondholders issued a new circular disapproving of it, but refused to hold a conference with the other committee. However, to meet the objections made to the plan of Oct. 23 it has been withdrawn, and the following plan submitted in its stead: The plan contemplates the issue of these securities: Four per cent. 100-year bonds, secured by first mortgage on all the property of the company, $40,000,000; four per cent. second-mortgage bonds, interest to be paid if earned, non-cumulative, obligation to pay interest to become absolute five years from date of bonds, $20,000,000; four per cent. preferred stock, $13,000,000; common stock, $47,000,000; assessment of 10 per cent. on existing stock, $4,650,000.

The following exchange of securities is offered: To a $1,000 six per cent. consolidated bond, new fours, $640; second mortgage bonds, $550; preferred stock, $275. To a $1,000 five per cent. consolidated bond, new fours, $550; second mortgage bonds, $500; preferred stock, $200. To each income bond issued under mortgage of April 1, 1876, new fours, $550; second mortgage bonds, $500. For the assessment of $10 on each share of the existing stock of the company second mortgage bonds will be issued dollar for dollar. It is proposed to pay the first mortgage consolidated seven per cent. bonds, principal and interest, in cash, and also, if satisfactory arrangements can be made, to pay the principal and interest of branch line bonds. For the purpose of raising the principal of the same, $22,500,000 of the new fours are offered for subscription. The fixed charges ahead of the stock after reorganization are placed at $2,998,320.

Two motions were argued in the foreclosure cases at Topeka this week. The first was that of the company, by Simon Sterne, to make the Missouri, Kansas & Texas Extension Company a defendant that the court might decide upon the claim of the Union Trust Co. to hold a lien upon 94 miles of road south of Denison alleged to have been conveyed to the Missouri, Kansas & Texas in 1881 by the Extension Railroad Company, as shown by a deed in which it is recited that that conveyance was subject to the mortgage of the Missouri, Kansas & Texas to the Union Trust Co. The second motion was to allow the Missouri, Kansas & Texas to file a cross bill.

Monongahela River.—The company has decided to suspend work until spring, and the men who have been employed at Shinnston have been discharged. It was hoped that the road would be completed to Clarksburg early this month, but the weather has been very unfavorable.

Newark & Passaic.—This company has been incorporated in New Jersey to build a road from a point in Newark between Emmet and Wright streets to a point on the right bank of the Passaic River, one-half mile north of the Morris Canal. The distance is three miles. The capital stock is $40,000. David G. Baird, of Beverly, is the largest stockholder.

New Orleans & Northwestern.—The name of the New Orleans, Natchez & Fort Scott road has been changed to the above. About 1,000 men now reported at work on the 30 miles now under construction from Vidalia, La., opposite Natchez, Miss., north toward Monroe, on the Vicksburg, Shreveport & Pacific. The maximum grade on the road is 40 ft., and there are four iron bridges 145 ft. long. The National Construction Co., of Natchez, Miss., has the contract for building 150 miles. Hammett, Davison & Co., of Kansas City, are the financial agents of the company.

New York, Lake Erie & Western.—The gross earnings and expenses of this company for the month of October, 1889, as compared with the same period last year, were as follows:

	1889.	1888.	Inc.
Gross earnings	$2,805,602	$2,562,316	$242,686
Operating expenses	1,694,682	1,553,889	140,793
	$1,110,320	$1,008,427	$101,893
Less proportion due to leased lines	250,118	221,957	28,161
Net earnings	$860,202	$786,470	$73,732

New York, New Haven & Hartford.—A summary of the annual report of the company has been made public. It says: "The four tracks between New Rochelle and Port Chester have been completed during the year. The double tracking of the Shore Line has been commenced, and is now being actively prosecuted at various portions on the 27 miles between Clinton and New London. Upon the New York division the work of four-tracking will be resumed. A section commencing at Westport, where the rock ballast now ends, and running west to South Norwalk, will be put under contract at once. The financial report makes the following showing: Income, passenger department, regular passengers, $4,925,457; commutation passengers, $207,422; extra baggage, $33,990; special trains, etc., $223,771; mails, $246,327; express, $274,497; total, $6,001,465. Freight department, $4,192,362; rents, $119,526; grand total, $10,313,353; total expenses, including rents, taxes, etc., $8,680,284; dividends (four of 2½ per cent.), $1,550,000; decrease in accounts payable, $681,607; roadway betterments, $632,200; new equipments, $400,257; four-tracking roadway, $521,805; Shore Line second tracks, $36,177; material on hand, $671,395; profit and loss, $4,300; balance (cash and cash assets), October, 1889, $307,020; total, $16,185,108; total train mileage, 87,114,383; number of passengers carried, 12,434,681; number of passengers carried one mile, 3,304,558,308; tons of freight carried, 3,276,245; tons of freight carried one mile, 225,937,906. All of the new stock recently authorized has been taken by the old stockholders. The proceeds of this issue of new stock were used in paying the notes of the company, and thus capitalizing the floating debt, increasing the capital from $15,000,000 to $18,600,000.

Northern Pacific.—This company has let a contract to King & Dickinson to construct a switchback line over the bluff at the water front in Tacoma, Wash., the western terminus of the line, a distance of a little over a quarter of a mile. The switchback will elevate the tracks 60 ft., and will cost about $10,000.

Oregon & Washington Territory.—This company last week began operating nearly 200 miles of road in Southeastern Washington and Northeastern Oregon, and extending in various directions from Walla Walla. Branches are built to Waitsburg, Dayton, Pendleton, Pleasant View, Centerville, Hunt's Junction, and other points.

Ottawa, Morrisburg & New York.—This company, whose application for a charter was rejected by the Dominion Senate at its last session, has given notice of a new application to be made for a charter to build a road from Ottawa, passing through Metcalfe, Vernon, Ormond, West Winchester, Winchester Springs, North Williamsburg to Morrisburg, Ont., on the St. Lawrence River, and to erect bridges across the St. Lawrence and Ottawa rivers.

Petuluma & Sebastopol.—The directors of this company have decided to abandon the scheme, as they have been unable to secure the right of way. They have returned to the stockholders the 70 per cent. of the capital stock paid in.

Philadelphia & Reading.—In renewing its application to the Philadelphia Common Council for a franchise to construct a terminal elevated road through the city, the pany submitted new plans changing the proposed route. The new plans show an elevated road only from Eleventh and Market streets to Ninth and Wallace streets, where the tracks descend to the present road by a grade of 164 ft. to the mile. The main line crosses Broad street at grade, as now, and is then elevated, the grade being 106 ft. to the mile, and joins the terminal between Eleventh and Twelfth and Vine and Callowhill streets, where many houses have been torn down recently by the company. The only grade crossing of any importance abolished by the plan is that at Ninth and Green streets. The council postponed action on the plans until the Terminal ordinance now pending comes up. By this ordinance the elevated road is to be built from Market street to Glenwood avenue, and the station at Broad and Callowhill streets is to be moved to the west side of Broad street.

The statement of the operations of the railroad for the month of Oct., 1889, as compared with the same month of 1888, is follows:

	1889.	1888.	Inc. or dec.
Gross receipts	$1,930,114	$1,991,486	D. $61,372
Open expen., excl. rent and int	979,42 5	937,326	I. 42,099
Net earnings	$950,689	$1,054,160	D. $103,471
Net earn. from Dec. 1	$7,401,466	$8,212,568	D. $811,102

Port Angeles & Greys Harbor.—This company has filed a charter in Washington to build a railroad through Clallam County, in the western part of the state. The survey for the line is to begin immediately.

Portersville & Tulare.—Articles of incorporation have been filed in California to build a narrow gauge road from Portersville northwest about 25 miles to Tulare, on the Southern Pacific. The capital stock is $220,000.

Poughkeepsie & Hudson.—The locating survey for this road, recently incorporated in New York, has been finished, and construction will probably begin very shortly. The road is to extend from a point on the Boston & Albany, and connecting with the Kinderhook & Hudson, through the towns of Livingstone, Blue Stone, Clermont, Upper Red Hook, Rhinebeck, Pleasant Plains, and East Park, to a point on the Central, New England & Western, near Poughkeepsie, a distance of 41 miles. The line will be built by Moffett, Hodgkins & Clarke, of Syracuse, N. Y. J. V. Clarke, 34½ Pine street, N. Y., is President, and E. H. Burlingame, of Providence, R. I., is Chief Engineer.

Richmond & Chesapeake.—The contract for work on the road let to Mason Hoge & Co., of Frankfort, Ky., aggregates $150,000. This includes the tunnel under Eighth street, at Richmond, Va., which is to be 3,640 ft. long. Only 40 men are now at work. Outside of Richmond there is no heavy work. The road is to be built

from Richmond to the Potomac River, where a ferry connection is to be made with the Baltimore & Drum Point. This, when done, will give a line 160 miles from Richmond to Baltimore. Charles W. Mackey, of Franklin, Pa., is President, and O. W. Barnes, 57 Broadway, New York, is Chief Engineer.

St. Catharines & Niagara Central.—This company is making a new survey north of the Grand Trunk from St. Catharines west to Grimsby, Ont.

St. Paul, Minneapolis & Manitoba.—Grading and tracklaying are reported completed on a branch from Grafton north a distance of 35 miles to Cavalier, Dak. Foley Bros. & Guthrie are the contractors. The line parallels the Northern Pacific.

Salt Lake & Eastern.—Grading on this road has been finished to Park City, Utah, and tracklaying will be completed to that point in a few weeks. The road is now in operation as far as Summit, within a few miles of Park City. When this line has been completed the forces now working on it are to be transferred to the Utah Western, between West Brigham and Monahanset Beach.

San Antonio & Aransas Pass.—The Austin extension, which was completed from Shiner to Luling, Tex., 40 miles, some months ago, has been extended northerly to Lockhart, on the International & Great Northern, about 65 miles from Shiner. The line from West Point, on the Colorado River, to Waco, has been finished from West Point north for several miles beyond Giddings, on the Houston & Texas Central. About 20 miles has also been completed from Waco south toward Cameron. Nearly all the grading on the extension has been finished, and the track is being rapidly laid from both northern and southern termini. The two forces will probably meet near Cameron. The distance from West Point north to Waco is 120 miles. On the extension east from Houston the location is now in progress and has been finished to a point near the state line. The contracts for clearing 45 miles of the line and for furnishing the ties for this section have been let. As has already been stated, the location of survey of the line from Kenedy southwest to Laredo, about 135 miles, is nearing completion. The company is putting in a double span iron bridge at the Colorado River, and a drawbridge over the Buffalo Bayou, east of Houston. Nelson, of San Antonio, Tex., is Chief of Construction.

Saskatchewan Colonization.—This company asks a charter from the Dominion Parliament giving power to construct a road from a point near Portage la Prairie, or Westbourne, Man., or from a point on the proposed line of the Lake Manitoba Railway & Canal Co., to a point at or near the junction of the Carrot and Saskatchewan rivers, with branches to Prince Albert and to a point on Lake Winnipeg, near the mouth of the Saskatchewan River.

Savannah, Americus & Montgomery.—Grading on this extension from Abbeville east to meet the Eden extension of the Central of Georgia has been completed to Sterling. Track has been laid from beyond McRae on the East Tennessee, Virginia & Georgia to the Oconee River. Through trains will probably be run over the extension between Savannah and Americus by Jan. 1.

Seattle, Lake Shore & Eastern.—The Seattle & Eastern Construction Co. will award contracts in a few days for the clearing, grubbing, grading and trestling, in sections of five or ten miles, of 40 miles of the Northern Branch of this road. R. H. Talcott is Vice-President and Chief Engineer, Boston Block, Seattle.

Seattle & Southern.—The preliminary survey of this road between Portland and Seattle has been completed to Sumner, Wash., a point 30 miles south of Seattle.

Sioux Falls & Denver.—The survey of this road was commenced last week at Sioux Falls, Dak., and will be continued southwest to Wheeler, on the Missouri River, about 55 miles. A line will also be run from Sioux Falls to Yankton. J. H. Drake, of St. Paul, Minn., is President.

Southern Pacific.—A party of engineers is now engaged in surveying a route from Saticoy south about five miles to Hueneme, Cal., and H. D. La Motte of this road has made a proposition to the supervisors of Ventura to pay half the cost of the right-of-way if the county will bear the rest of the expense of the line.

Spokane Falls & Northern.—This company has completed its road from Spokane Falls, Wash., north to Colville, 88 miles, and regular trains have been running over it for about two weeks. The company expects to complete the track to Marcus, on the Columbia River, this winter. A survey is being made for an extension up Kettle River to Kettle Falls in British Columbia. It is stated that the company intends building a line either to Kootenay mines or up Kettle River to a junction with the Canadian Pacific. J. M. Buckley, of Spokane Falls, is Superintendent.

Ticonderoga.—This company has been organized and articles of association filed in New York for a road about two miles in length, to connect the village of Ticonderoga with the main line of the Delaware & Hudson, at Addison Junction.

Tilsonburg & Port Burwell.—A company of this name has been organized in Ontario to build a road between these towns, a distance of about 15 miles.

Toronto, Hamilton & Buffalo.—A director of this company claims that when completed it will be operated by the Michigan Central. The charter of the company provides that it shall not amalgamate its road or lease it to any other company, and an amendment to the charter canceling this clause will be asked of the government. The company has now only a provincial charter, but will ask the next Parliament for a Dominion charter.

Union Pacific, Denver & Gulf.—The negotiations between the Union Pacific and the Denver, Texas & Fort Worth, referred to last week, have resulted in agreements yet to be drawn and ratified for the formation of a corporation to be known as the Union Pacific, Denver & Gulf, which will absorb the Denver, Texas & Fort Worth road and the Colorado lines of the Union Pacific, except the Denver, Leadville & Gunnison. The basis of the new company will be on the same lines as those of the Oregon Short Line. The Union Pacific lines which will form part of the new line are the Colorado Central, the Denver, Marshall & Boulder and the Cheyenne & Northern. The new company will operate about 1,400 miles, from Cheyenne and Denver to the Gulf of Mexico.

Vaudreuil & Prescott.—The company expects that trains over this road will be running into Ottawa by Nov. 1, 1890. Thirty miles of the line has been graded, and the track is laid on 20 miles. About 150 men and 50 teams are employed on the line at present. The road is being built from Vaudreuil, P. Q., via Rigaud and Caledonia Springs to Ottawa, Ont., a distance of 106 miles. The work is light, with maximum curves of 5 degrees and maximum grades of .75 per 100 ft. The contract has been let to Charlebois & Foster, of Montreal, P. Q. There will be a bridge at Rigaud 300 ft. long, one over the Nation River 600 ft. long, and one over the Redau River 400 ft. long. There will be no others of any size. J. M. Shanly, 44 Imperial Building, Montreal, is Chief Engineer.

Washington & Idaho.—On the extension east from Spokane Falls, over 80 miles of grading has been finished and tracklaying is proceeding at the rate of two miles a day, and Mullan will probably be reached in a few weeks. Regular trains have been running for some time between Tekoa, on the line of the Oregon Railway & Navigation Co., and Spokane Falls.

Western Maryland.—The engineers now employed in making a survey of the proposed western extension are now beyond Orrstown. The line starts at a point between Southhampton and Shippensburg, and extends westward to Herr's Mill and along the south side of the Conodoguinett River, crossing it near the stone bridge west of Orrstown. The engineers are heading for Roxbury Gap.

TRAFFIC.

Traffic Notes.

Twenty-five carloads of oranges were taken North by the Louisville & Nashville in a single train last week, two carloads being destined for Helena, Mont.

Dispatches of Nov. 29 report that corn is being taken from St. Louis to the seaboard by the Ohio & Mississippi and the Vandalia lines at three cents less than tariff rates.

The Pennsylvania Company has reduced the time of the fast Southern express between Chicago and Cincinnati. The train will leave Chicago daily at 10 A. M., and arrive at Cincinnati at 6:30 P. M. the same day, making the run in 8½ hours.

The Boston & Albany runs warm freight cars from Boston in cold weather to facilitate the carrying of fruit and vegetables. A certain train one day in each week (Thursday) takes all such shipments offered for any point on the main line.

The Atchison, Topeka & Santa Fe has given notice of withdrawal from the International Association (which is the old Texas Traffic Association). Dissensions concerning the rates to the Mexican frontier points are said to be the cause.

During the year ending June 30, 1889, the Northern Pacific carried 42,000 second-class passengers to Oregon and Washington, an increase of 19,000 over the previous year. Up to Nov. 26 of the present year the records show an increase of 1,200 over the same time last year. For the year ending June 30 the company served 94,000 meals in the dining cars.

The following are the towns which it is proposed to include within the jurisdiction of the Cleveland Car Service Association: Ashtabula, Painesville, Elyria, Niles, Galion, Urbana, Marion, Sandusky, Massillon, Canton, Mansfield, Alliance, Youngstown, Ravenna, Warren, Hubbard and Crestline, O.; Sharon, Sharpsville, West Middlesex and Girard Junction, Pa.

In the reorganization of the Denver Demurrage Bureau and the enlargement of its scope under the name of the Colorado Demurrage Association, it was proposed to raise the rate per car per day to $1, but it is now announced that the old rate of 50 cents will be continued.

The roads centering in Grand Rapids, Mich., have formed a car service association, to go into effect Jan 1.

The Baltimore & Ohio has reduced its passenger rate from Pittsburg to Washington and Baltimore to $8, a reduction of $1. The rate has heretofore been uniform to Philadelphia, Baltimore and Washington, and it is stated that this reduction is made to remove the inequality between Philadelphia and the two other cities; but the Pennsylvania claims that it was made without legal notice.

Chairman Abbott, of the Western States Passenger Association, has decided that the Chicago, St. Paul, Minneapolis & Omaha has been guilty of a violation of its agreement in selling a detached coupon good from Chicago to New York in connection with one of its 1000-mile tickets. The result of this transaction was to reduce the agreed rate from St. Paul to New York. The Chicago, Burlington & Northern made the complaint. A penalty of $100 fine and redemption of the irregular ticket at full rates was imposed.

The Chicago & Grand Trunk protests against the injustice of the Michigan law regulating passenger fares and will test its constitutionality. A person demanding reduced rates was refused, and has just secured an award of $101.50 damages and costs against the road, and the case will be taken to the Supreme Court. Among other points raised it will be insisted that the law is void in setting a fixed price on the transportation of passengers without regard to the cost or value of the work to be performed. It will also be claimed that the law effects class legislation in favor of certain railroads and against others.

Prevention of Misuse of Tickets.

Chicago passenger men are considering the adoption of a new form of round-trip ticket, of which the distinctive feature is an "advice stub section" on which the selling agent obtains the purchaser's signature. The stub is then detached and forwarded by the first train mail to the ticket agent at the destination to which ticket is issued. The contract provides that the original purchaser must present the ticket to be executed for return passage at the station ticket office just previous to the departure of the train he intends to take. The ticket agent has the advice stub in his office. This stub is handed to the owner of the ticket with the original signature covered in such a way that he can neither see nor imitate it. The passenger then writes his name, returns the stub to the agent, who thereupon unfolds the ticket, disclosing the two signatures one above the other. If the new signature differs from the original, the ticket is taken up, as it is valueless. If the new signature agrees with the old one, the ticket is made good for return passage on that particular train.

The Michigan Central used these tickets during the Chicago Exposition in September, during which time 2,647 tickets were sold from the various stations on its line to Chicago and return. Of this number 437 tickets, valued at $2,143.65, were not used returning, owing to the brokers' inability to handle them.

Iowa Railroad Commissioners' Decisions.

The Iowa Railroad Commissioners have instructed Attorney-General Stone to bring three suits to enforce their orders. The first is against the Chicago, Rock Island & Pacific for refusal to do through billing over connecting lines as requested by the commissioners. The company replies that it is not practicable under existing conditions, and squarely refuses. The second is against the Burlington, Cedar Rapids & Northern, for attaching a through freight car to a passenger train for the purpose, it is alleged, of giving Chicago shippers an advantage over Davenport and other Iowa shippers. The third is against the Milwaukee road for failure to comply with the commissioners' orders relative to switching charges at Dubuque. The company claims that it cannot be compelled to share its switching facilities with competing lines. The suits will all be begun at once.

Imports and Exports for October.

The foreign commerce of this country, particularly the export trade, made a big leap during the month of October. The total exports in that month exceeded those of September by over 51 per cent. in value, were larger by 31 per cent. than the exports for October last year, and with the exception of one month (December, 1880) were the largest on record. The imports showed a less remarkable increase, gaining only 28 per cent. over the September, 1889, total, and only three per cent. over the October, 1888, total. Notwithstanding the comparatively moderate increases noted, the total import trade in October was only exceeded five times in nine years. Perhaps the most notable feature in connection with this matter is the fact that the exports in October exceeded the imports by 58 per cent., which excess is, we believe, the greatest ever shown. While the preliminary export statements of leading articles, particularly of cotton, which is responsible for a large part of the increase, led us to expect a very large increase in the aggregate exports for the month just closed, it is certainly encouraging to know, as the figures received indicate, that the tendency toward an increase was not confined to the more important lines of export, but is also shared by the less important articles of domestic merchandise exported.—*Bradstreet's.*

Coal Rates in Nebraska.

The Nebraska State Road of Transportation has promulgated an order putting in force a new freight tariff on coal. The reduction from present rates is from 30 to 55 per cent. The same rates are to apply on hard and soft coal. The terminal charge is fixed at 30 cents per ton. The rates must go into effect on or before Dec. 15. This is apparently a reiteration of the order which was issued last summer, and published in these columns Aug. 2, but which has never been enforced. It appears however, that most of the coal traffic is Interstate.

Lake Traffic of the Season.

The Chicago papers summarize the grain, coal and ore traffic of the lakes for the season. The boats have taken 102 million bushels of grain from Chicago, and 10 million from Duluth. Iron ore shipments from Lake Superior amount to 6⅔ million tons, and about four million tons of coal have been taken from Buffalo and Ohio ports. General merchandise arriving at Chicago aggregates 450,000 tons, and merchandise shipped from that city 525,000 tons. The boats have averaged 12 to 15 per cent. income on their capital, except in the case of lumber carriers, which have not done so well. The season was remarkable for its comparative freedom from loss of life, the same as 1888, though 23 persons were lost in wrecks and collisions, all seamen; but in property lost the aggregate is $1,500,000, most of which represents first-class steamers stranded or sunk in collisions. The rate on corn from Chicago to Buffalo fluctuated from 1⅝ cents per bushel, where it stood for a short time in May and July, and for about a month following June 15 to 2¾ cents, where it remained quite steadily from Aug. 15 to Nov. 1. Ore rates from Escanaba were 90 cents until the middle of August, when they rose quite steadily to $1.25, which point they reached Oct. 15. In the week ending Aug. 17, vessel room was chartered at Chicago for 6,000,000 bushels, the largest week's business ever recorded.

Anthracite Coal Tonnage.

The Philadelphia *Public Ledger* publishes the following table as containing the only official statistics of the individual companies transporting anthracite coal that has been obtainable for a long time. The figures give the respective (corrected) tonnage of the seven anthracite carrying companies for the nine months of the year to Sept. 30, compared with the corresponding period of last year:

	1889.		Changes from 1888.
Philadelphia & Reading	5,090,916	I.	139,239
Lehigh Valley	4,781,004	I.	15,503
Central of New Jersey	4,294,705	I.	174,184
Delaware, Lackawanna & Western	3,862,350	D.	1,163,464
Delaware & Hudson Canal	2,836,584	D.	152,751
Pennsylvania	2,858,116	D.	615,959
Pennsylvania Coal Co	973,718	D.	260,420
New York, Lake Erie & Western	889,894	I.	194,344
Total	25,587,287	D.	1,948,324

East-bound Shipments.

The shipments of east-bound freight from Chicago by all lines for the week ending Saturday, Nov. 23, amounted to 69,633 tons, against 66,046 tons during the preceding week, an increase of 3,587 tons, and against 61,361 tons during the corresponding week of 1888, an increase of 8,272 tons. The proportions carried by each road were:

	W'k to Nov. 30.		W'k to Nov. 23	
	Tons.	P. c.	Tons.	P. c.
Michigan Central	10,504	15.1	8,822	13.4
Wabash	3,156	4.5	3,992	6.0
Lake Shore & Michigan South	12,638	18.1	11,070	16.8
Pitts., Ft. Wayne & Chicago	7,743	11.1	8,625	13.1
Chicago, St. Louis & Pitts	7,445	10.6	11,016	16.7
Baltimore & Ohio	6,011	8.6	5,701	8.6
Chicago & Grand Trunk	8,542	12.2	6,908	10.5
New York, Chic. & St. Louis	5,092	7.6	4,456	6.7
Chicago & Atlantic	8,502	12.2	5,286	8.2
Total	69,633	100.0	66,046	100.0

Of the above shipments 2,481 tons were flour, 30,217 tons grain, 2,819 tons millstuffs, 6,730 tons cured meats, 5,350 tons lard, 8,145 tons dressed beef, 860 tons butter, 2,068 tons hides, 594 tons wool and 4,946 tons lumber. The three Vanderbilt lines together carried 40.8 per cent., while the two Pennsylvania lines carried 21.7 per cent.